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S/120/62/000/004/010/047  
E032/E514

24.6730  
AUTHORS:

Vladimirskiy, V.V., Kobozav, A.S., Marfenko, S.V.,  
Pevnev, A.K., Porubay, N.I. and Tarasov, Ye.K.

TITLE:

Effect of the deformation of the foundations on the  
orbit of protons in a synchrotron

PERIODICAL: Pribery i tekhnika eksperimenta, no.4, 1962, 66-69

TEXT:

Unavoidable displacements of the ground in the  
vertical and horizontal directions due to seasonal variations in  
the temperature, humidity and so on, may give rise to relative  
displacements in the position of magnet sections, which in turn  
may produce forced oscillations of the proton beam. In the  
7 GeV proton synchrotron of the GKAE the magnet is supported by  
a continuous solid ring which is in principle similar to that  
employed at CERN. The reinforced-concrete ring which supports  
the magnet lies directly on the ground which consists of soft  
morainic deposits. The relatively small dimensions of the ring  
( $R = 40$  m) ensured that it could be made sufficiently rigid and  
thereby minimise the effect of nonuniform settling of the ground  
on the orbit. The ring was placed at a depth of 5 m. A theoretical  
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Effect of the deformation of the ... S/120/62/000/004/010/047  
E032/E514

analysis is now given of the strength of the ring foundation by developing the displacement of the axis of the accelerator chamber due to deformation of the foundations into a Fourier series. Owing to the rigidity of the magnet sections and the small distance between neighbouring sections, the position of all the sections can be specified with sufficient accuracy by the coordinates of 112 points. The Fourier series, therefore, contain a finite number of terms. For each harmonic of the deformation one can then calculate the amplitude of the corresponding periodic orbits. Numerical calculations showed that the 13th, 43rd and neighbouring harmonics were the most dangerous. The mathematical analysis is facilitated by the fact that a mathematical solution is available for the problem of mechanical vibrations of an elastic ring (Love, Mathematical Theory of Elasticity). In their final form the foundations were in the shape of a continuous reinforced-concrete belt of square cross-section having a length of 250 m, height 5 m and width 5 m with a nett load of about 16 tons per running metre. The belt contains two circular cable tunnels ( $1.25 \times 1.95 \text{ m}^2$ ). The analytical

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calculations and the design data were then tested experimentally by observations of the position of 28 markers attached to the foundations. Vertical and radial variations for the period 1959/62 are reported in the form of graphs, from which it is concluded that the maximum departure of the orbit from the axis of the chamber, due to the deformation of the foundations, did not exceed 1.5 mm. The amplitude of the deformations of the foundations was of the same order of magnitude (about 1 mm). There are 2 figures and 2 tables.

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy  
fiziki GKAE  
(Institute of Theoretical and Experimental Physics  
GKAE)

SUBMITTED: March 31, 1962

Card 3/3

KOBOZEV, G. V., Cand Med Sci -- (diss) "Apparatus for frontal micro-electrophoresis with optical registration and its application to the study of adsorption properties of proteins in blood serum." Simferopol', 1960. 20 pp; (Krymskiy State Medical Inst im I. V. Stalin); 200 copies; price not given; (KL, 17-60, 169)

TROITSKII, G.V.; KOBOZEV, G.V.

Design of precision spectropolarimeters used for protein  
studies. Biokhimiia 28 no.6:992-998 N-D'63 (MIRA 17:1)

1. Chair of Biological Chemistry, Medical Institute, Sverdlovsk.

ALICE 666, 666  
USSR/Medicine - Pathophysiology

FD-2561

Card 1/1 Pub. 17-14/23

Author : Meyerson, F. Z.; Kobozev, G. V.

Title : On a method for forming an experimental stenosis of the aorta

Periodical : Byul. eksp. biol. i med. 5, 50-52, May 1955

Abstract : Describes a method for forming an experimental stenosis of the aorta in rabbits which permits the following: constriction of the aorta following an appreciable interval of time after the operation, gradual constriction of the aorta, and removal of the ligature after a period of constriction of the aorta without requiring a second operation. Diagrams. Three references, two of them USSR (since 1940).

Institution : Central Scientific Research Institute of Physical Methods for Therapy imeni I. M. Sechenov (Director O. V. Glebova), Yalta

Submitted : July 22, 1954 by Academician A. D. Speranskiy

Kobozev, G. V.  
APPROVED FOR RELEASE: 09/18/2001

CIA-RDP86-00513R000723410014-

Integral graded salivograph. Zh. vyzn. nerv. delat. 5 no.6:912-915  
M-D '55. (MIRA 9:3)

1. Institut fizicheskikh metodov lecheniya imeni I.M. Sechenova,  
Yalta.

(SALIVATION,  
registration with integral graded salivograph)

MEYERSON, F.Z.; KOBOZEV, O.V.

Method of producing experimental stenosis of the aorta. Biul. eksp.  
biol. i med. 39 no.5:50-52 My '55. (MLRA 8:7)

1. Iz Tsentral'nogo nauchno-issledovatel'skogo insitut fizicheskikh  
metodov lecheniya imeni I.M. Sechenova (dir. O.V. Olebova), Yalta.  
Predstavlena akademikom A.D. Speranskim.  
(AORTIC, VALVE, stenosis,  
exper., technic of prod.)

AC-150 A V. V.  
KOBOTZEV, O.V.

Use of mechanical coulometer in protein electrophoresis [with  
summary in English]. Ukr.biokhim. zhur. 29 no.3:375-382 '57.  
(MIRA 10:9)

1. Kafedra biokhimii Krynskogo meditsinskogo instituta,  
S. Sinaferopol'.

(VOLTAMETER) (ELECTROPHORESIS)  
(PROTEINS--ANALYSIS)

TROITSKIY, G.V.; KOBOTZEV, O.V.

APPROVED FOR RELEASE: 09/18/2001

CIA-RDP86-00513R000723410014-9

Further improvement of the apparatus for protein electrophoresis  
[with summary in English]. Biokhimiia 23 no.6:869-878 M-D '58  
(MIRA 11:12)

1. Kafedra biologicheskoy khimii Krynskogo meditsinskogo instituta  
Sinaferopol'.

(ELECTROPHORESIS)

KOBOKEVA, O.M.; KOBOKIN, G.V.

Method of using small quantities of serum for paper electrophoresis. Lab. data 6 no. 3:57-58 My--'s '60. (MIRA 13:7)  
(PAPER ELECTROPHORESIS) (SERUM)

KOBOZEV, G. V., (USSR)

"A Cuvette for Frontal Electrophoresis, made  
of Organic Glass with Cooling."

Report presented at the 5th Int'l. Biochemistry Congress,  
Moscow, 10-16 Aug 1961.

KOBOZEV, I. I., ENGR-HYDROGEOLOGIST

ENGR/Geophysicist - Hot-Spring Minerals Mar 52

"New Sources of Minerals," I. I. Kobozov, Engr-  
Hydrogeologist

"Priroda" Vol 41, No 3, pp 119, 120

States that underground waters, by circulating through mineral deposits in the depths of the earth, are often enriched with salts and gases and thus can form mineral sources where they exit at the surface; e.g., at the hot springs of Staraya Russa, Sol'tsy, Kamchatka, northern

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Urals, etc. States that a theoretical study must be made to det the conditions of temp and soly that govern possible sources of minerals. Mentions works on Sakhalin to exploit the mud pots there, and also so-called "sifoids," as sources of CO<sub>2</sub>.

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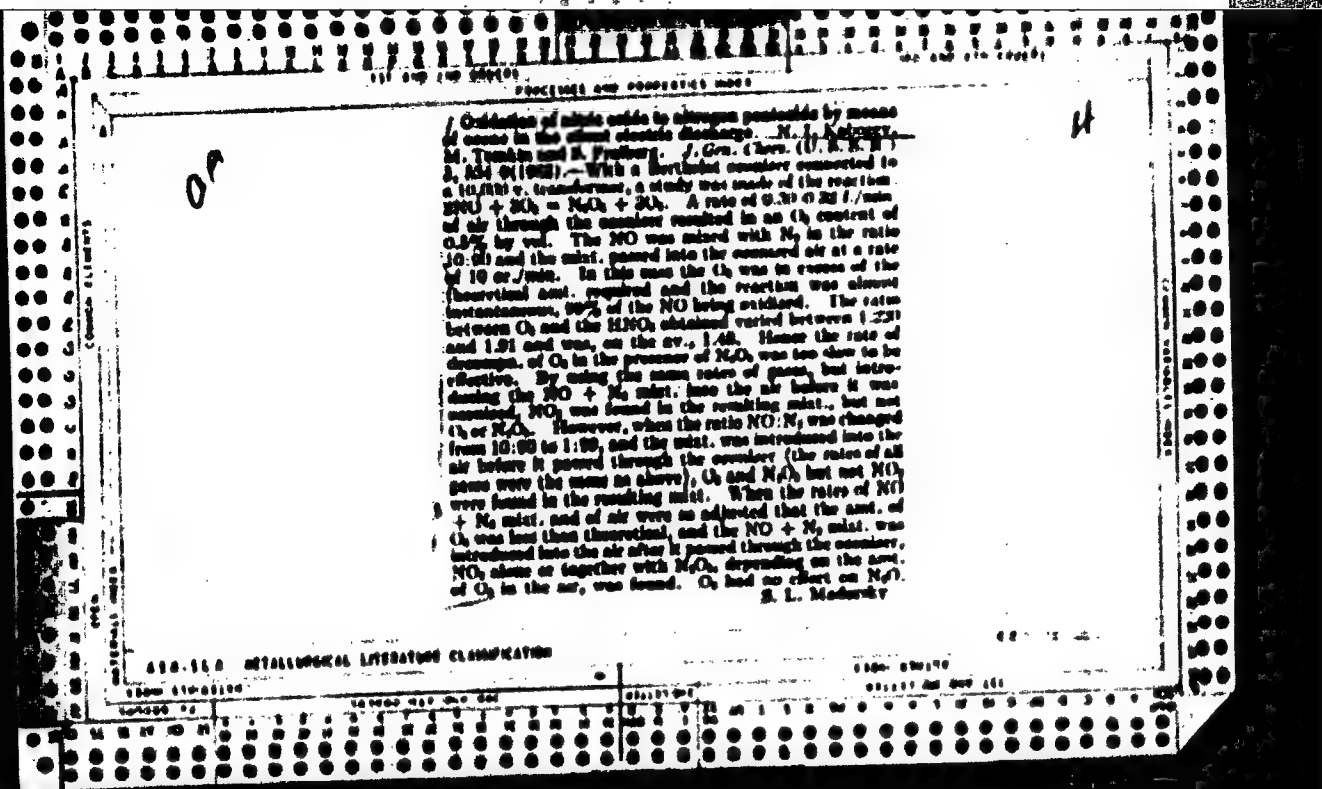
**CIA-RDP86-00513R000723410014-9"**

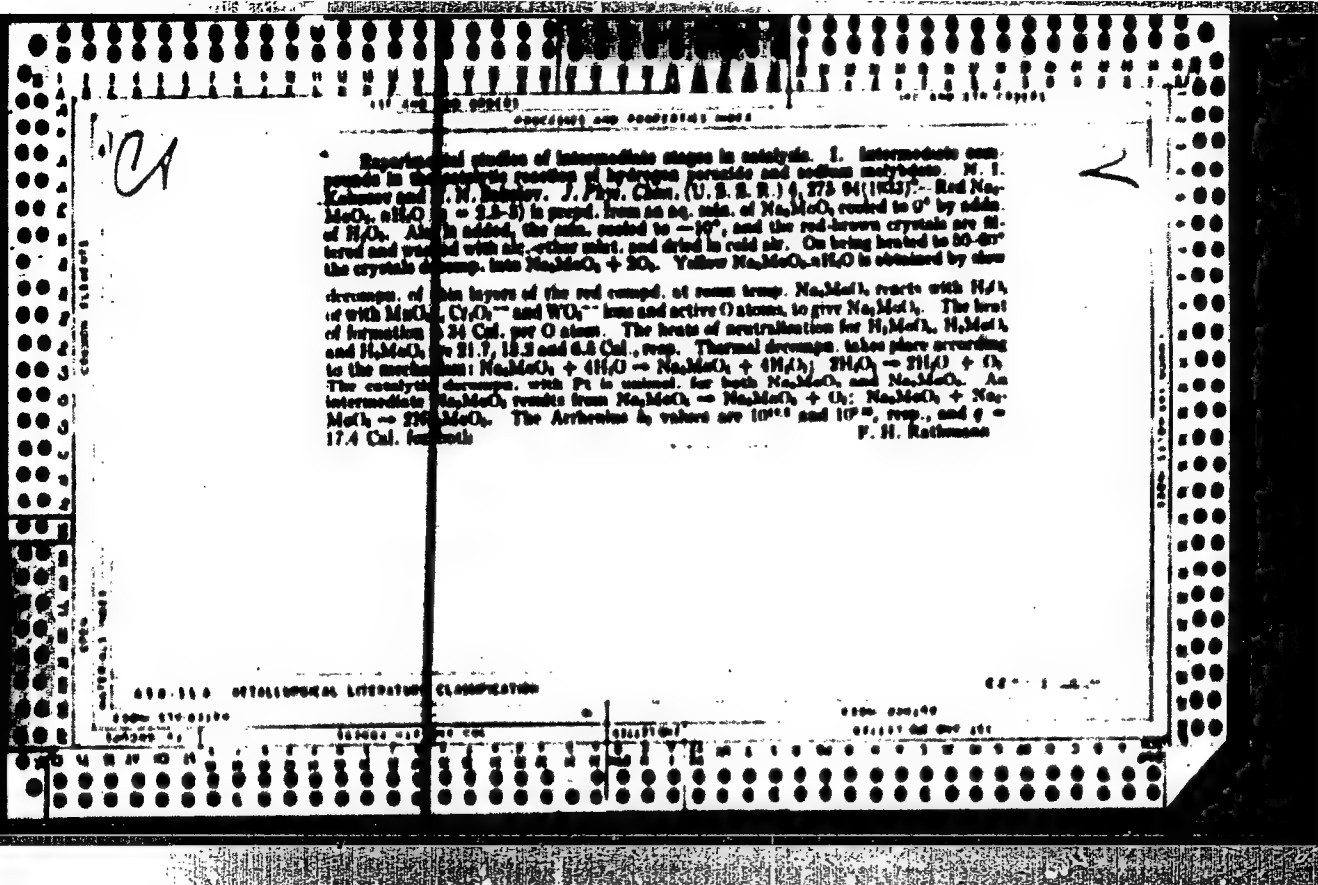
KOBOZEV, I.

New occurrence of carbonic acid saline-alkaline waters like those of  
springs nos. 17 and 4 in Yessentuki. Vop.kur.fisioter. i lech. fiz.  
kul't. 21 no.3:95-96 J1-3 '56. (MLRA 9:10)  
(NOVOBLAGODNOYE--MINERAL WATERS)

Card 1/1

water-economic aspects







*C.A.*

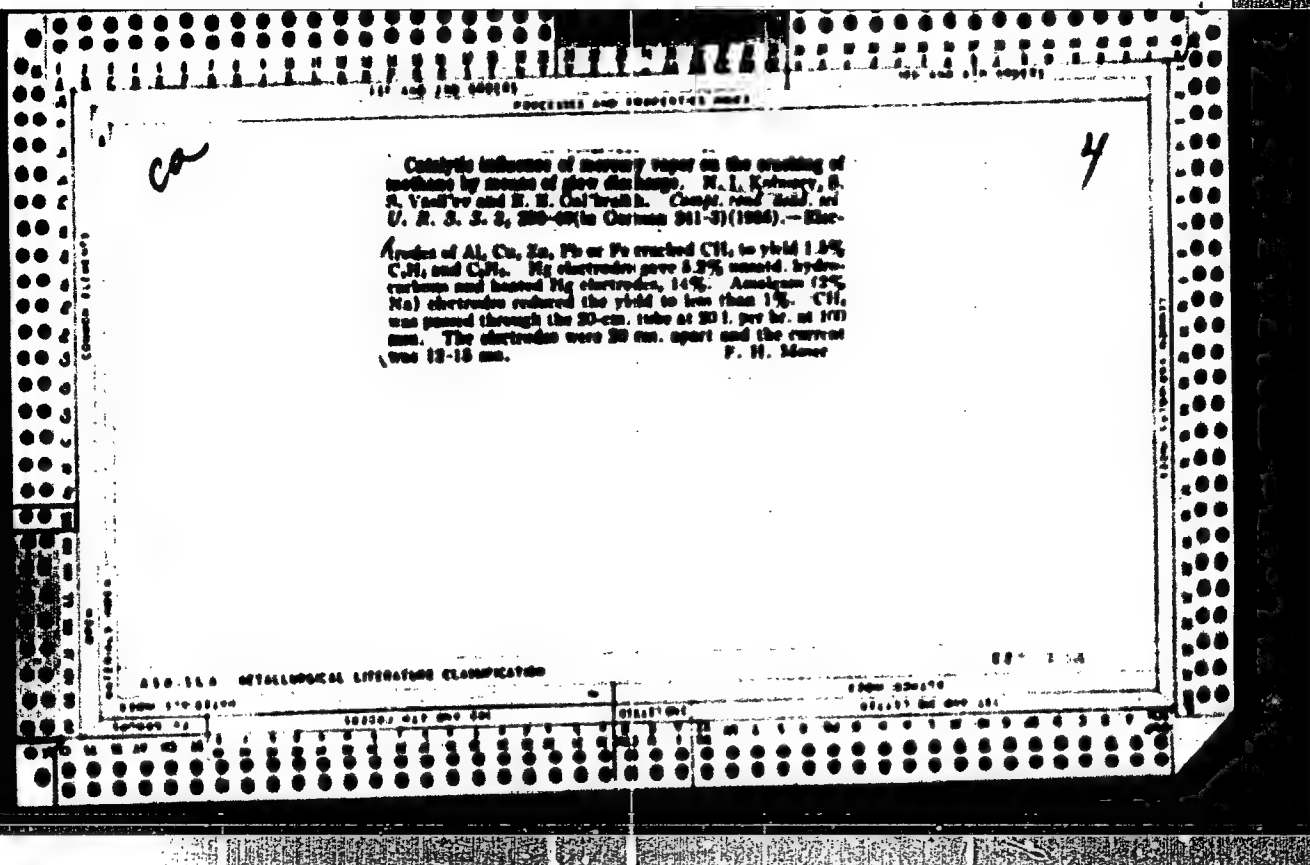
Mechanism of the promoting action of iron oxides  
Kobayashi, M., I. Kobayashi, B. V. Stokov, J. N. Kargin  
and A. N. Komarovskaya. *Russ Phys Chem*, U.S.S.R.  
Soc., S.I., 68B-90(1964) (in English).—The promoting action  
of Al<sub>2</sub>O<sub>3</sub> and MgO on FeO was studied from the viewpoint  
of mixed crystals between the promoter and the initial Fe  
oxide. The formation of mixed crystals is in itself in-  
sufficient to cause the promoting action. It was proposed  
that it was necessary for a promoter to be surface-active  
with regard to the initial mass of the catalyst. A pro-  
nounced difference between the surface tensions of Fe<sub>2</sub>O<sub>3</sub>  
and Fe<sub>2</sub>O<sub>3</sub> + Al<sub>2</sub>O<sub>3</sub> and an absence of such a difference  
between FeO and FeO + MgO as confirmed by the  
catalytic activity of Fe reduced from three oxides was  
briefly shown.  
H. H. Rowley

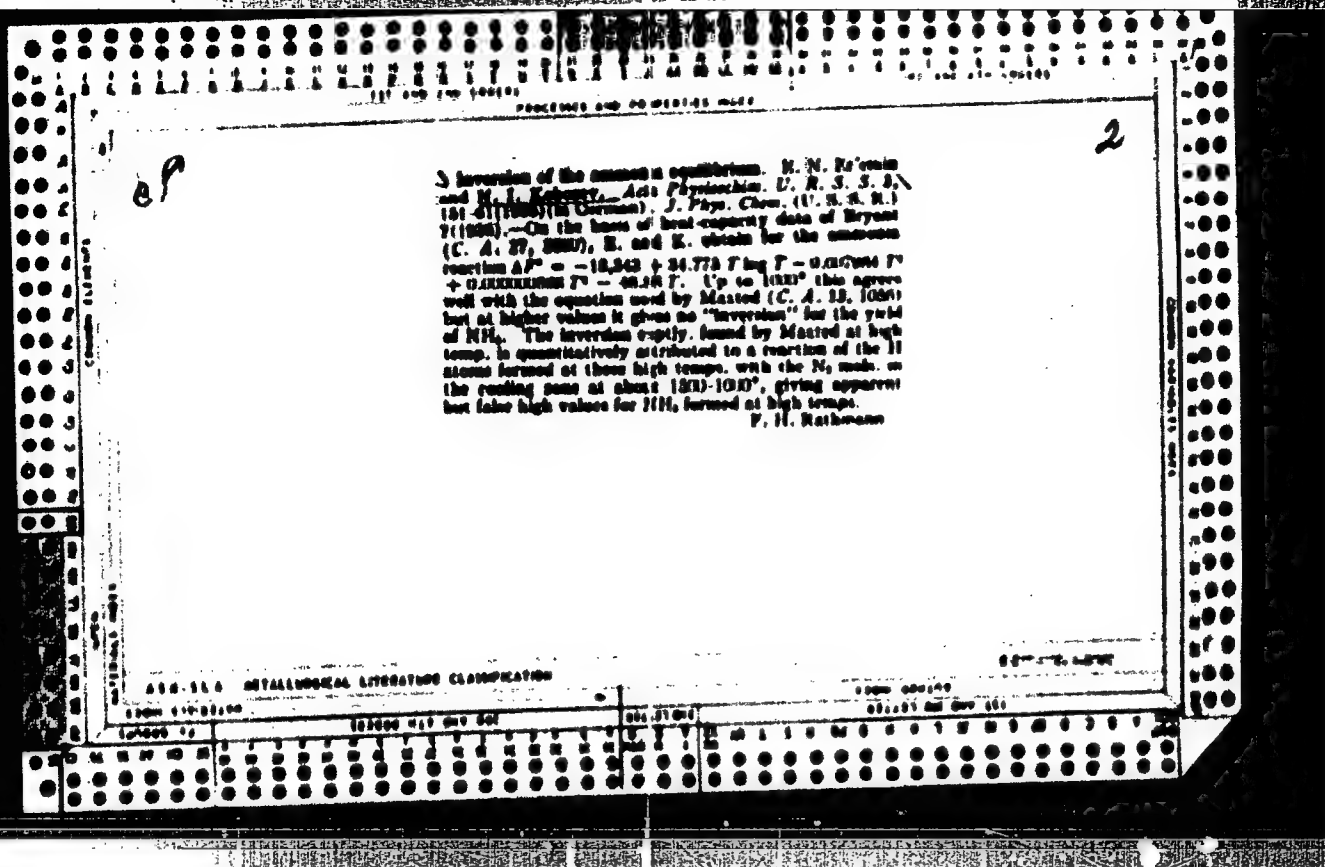
*V*

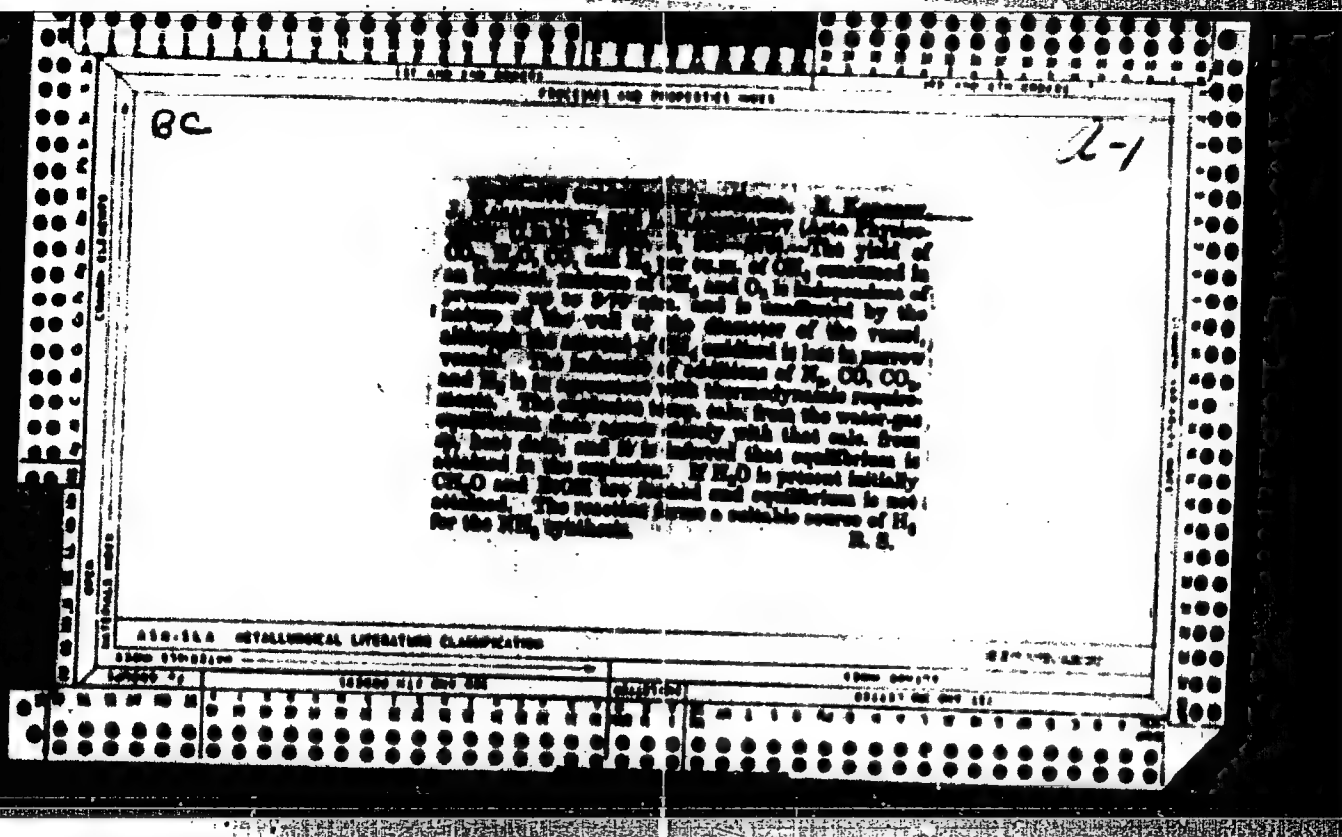
A.S.T.M. METALLURGICAL LITERATURE CLASSIFICATION  
BOOK STORAGE  
CLASSIFIED BY  
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<p>CH</p>	<p>2</p> <p>The mechanism of the electrodiffusion of hydrogen through palladium. M. I. Kabanov and V. Monchakov. <i>Acta Physicochim. (U. S. S. R.)</i> 1, 811-821 (1954) (in Russian); <i>J. Phys. Chem. (U. S. S. R.)</i> 8, 303-321 (1955). — A comparison was made of the dependence of the electrodiffusion of <math>H_2</math> through a Pd membrane on the condition of the polarization and diffusion surface of the membrane. By use of <math>H_2</math>, <math>H_2O</math>, <math>C_2H_6</math>, glycerol and lactic acid solutions it was found that the electrodiffusion process was not affected by the variation of phys. properties of the medium in contact with the diffusion side of the membrane. The electrodiffusion was accelerated by poisoning the polarization surface with pyridine, <math>CN(NH_4)_2</math>, and <math>Na_2AsO_4</math>, and retarded by poisoning the diffusion surface with the same substances and <math>H_2S</math>. The presence of electrolytes in the solution, particularly <math>KCl</math> and <math>KOH</math>, had a marked effect in retarding on the diffusion side and accelerating on the polarization side. It was shown that the diffusion took place through the intercrystal gaps and that the edges of the crystals formed the diffusion centers. The linear dependence of the diffusion velocity on <math>\Delta E</math>, the <math>H</math> potential of the Pd membrane, was shown to hold for both the polarization and diffusion sides. M. M. Kozlov</p>
	<p>68-554 METALLURGICAL LITERATURE CLASSIFICATION</p>

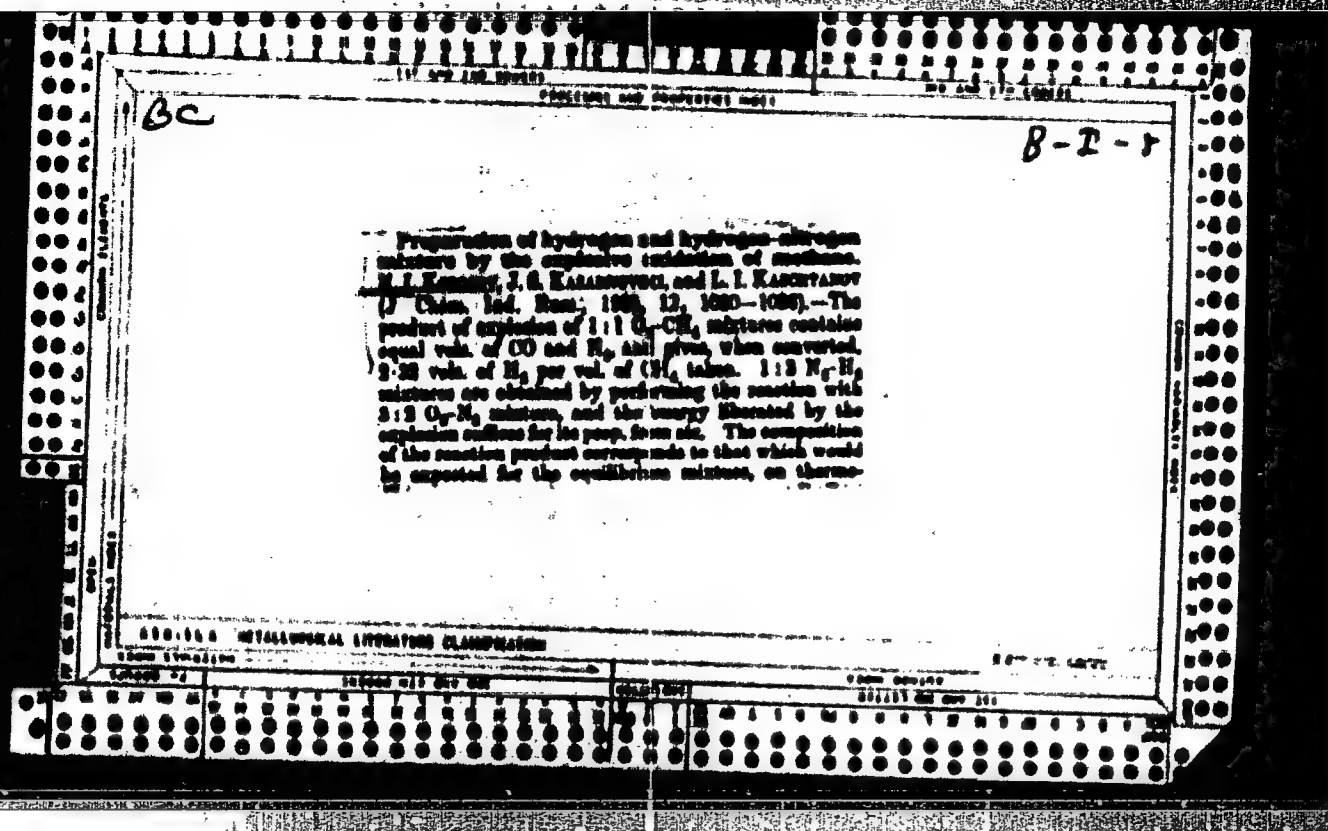
<p>BC</p>		<p>B-I-7</p>	
<p>Physico-chemical study of air-depollutization cells. R. I. Kozlov and N. N. Sazonov (J. Appl. Chem., USSR, 1966, 7, 864-813).—Oxidation of Whetsted <math>H_2</math> by <math>O_2</math> adsorbed on <math>UO_2</math> is demonstrated. The quality of the <math>O_2</math> is characterized by the index <math>k = AP</math>, where <math>A</math> is the absorptive capacity and <math>P</math> the porosity; the value of <math>k</math> varies from 1000 for high- to 21 for low-quality <math>O_2</math>. R. T.</p>			
<p>ABSTRACT METALLOGICAL LITERATURE CLASSIFICATION</p>			

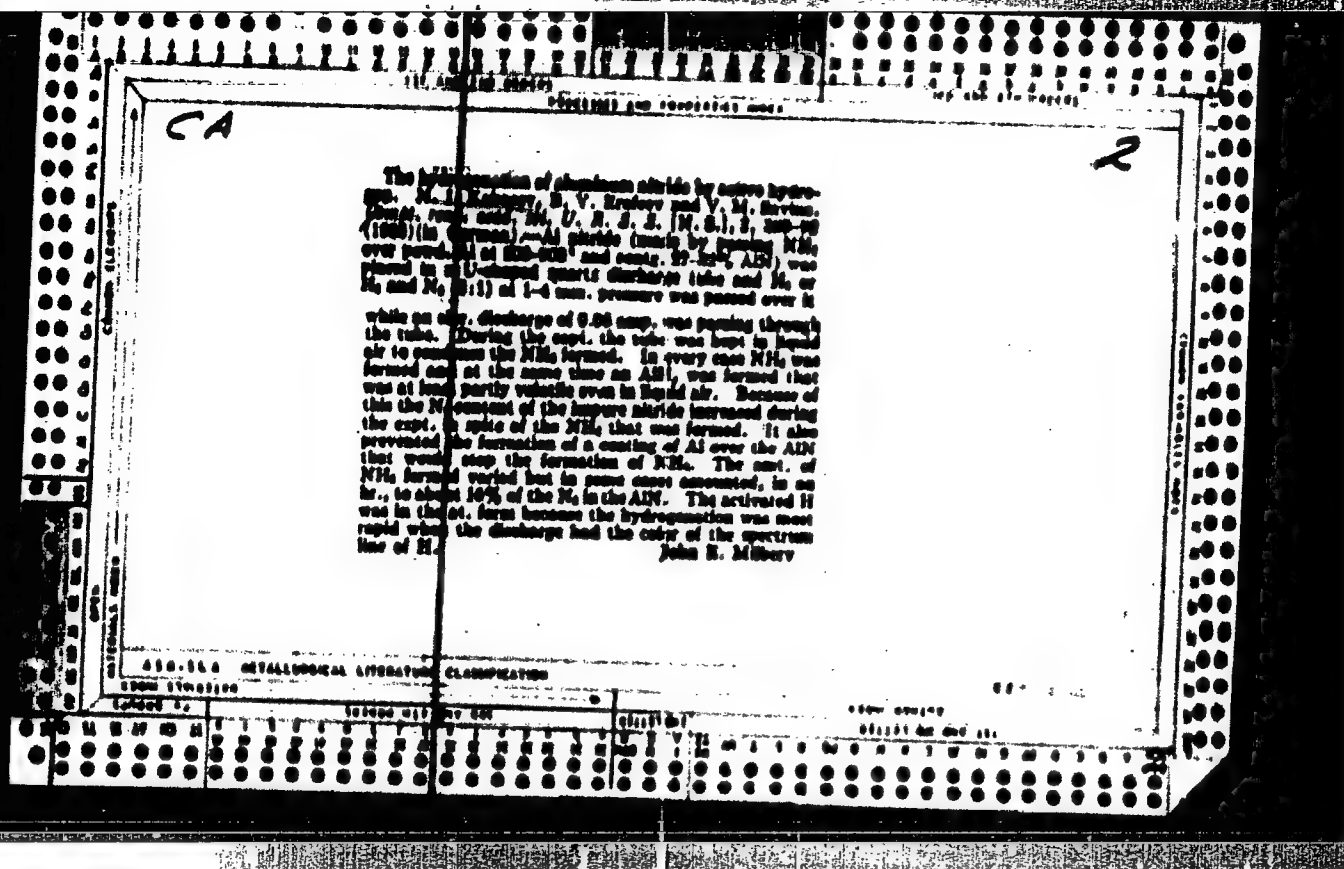


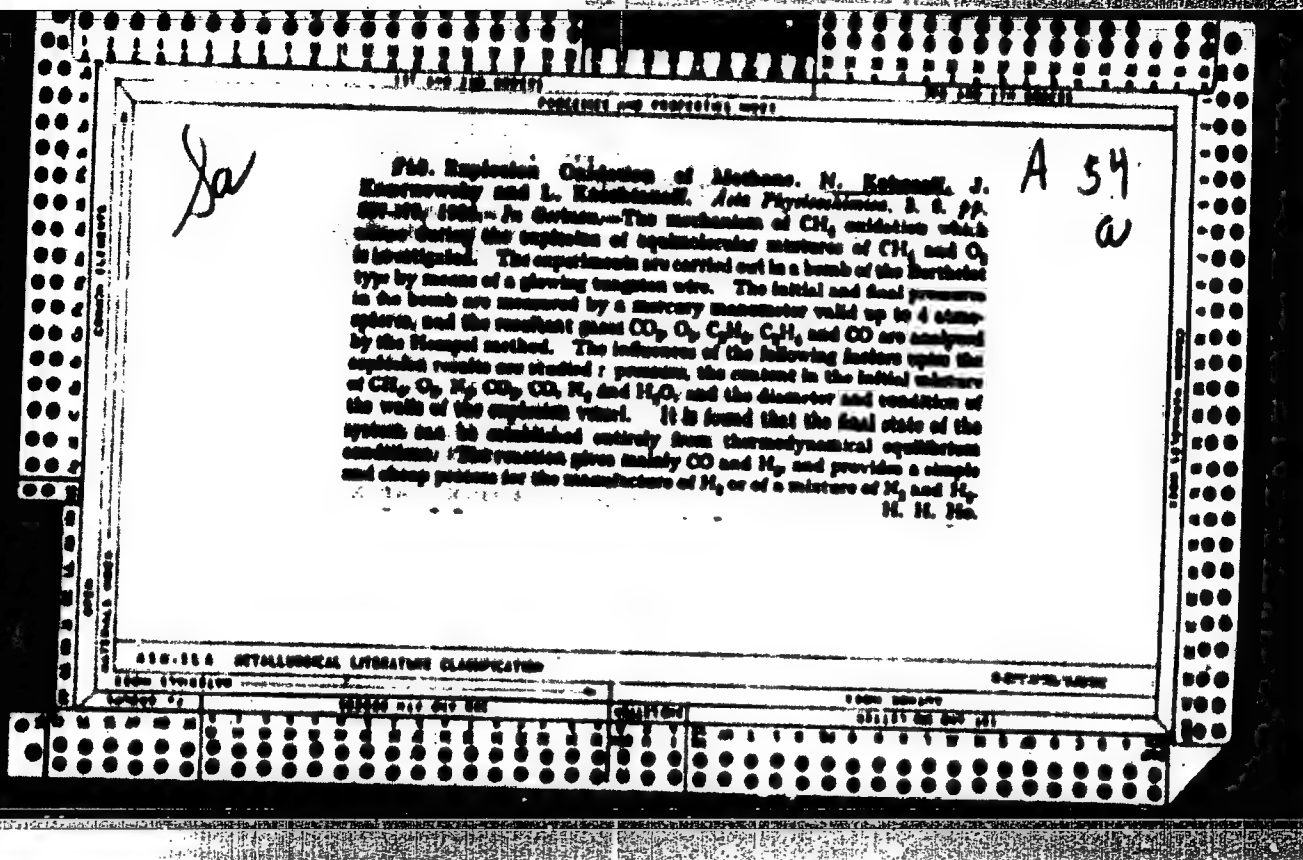




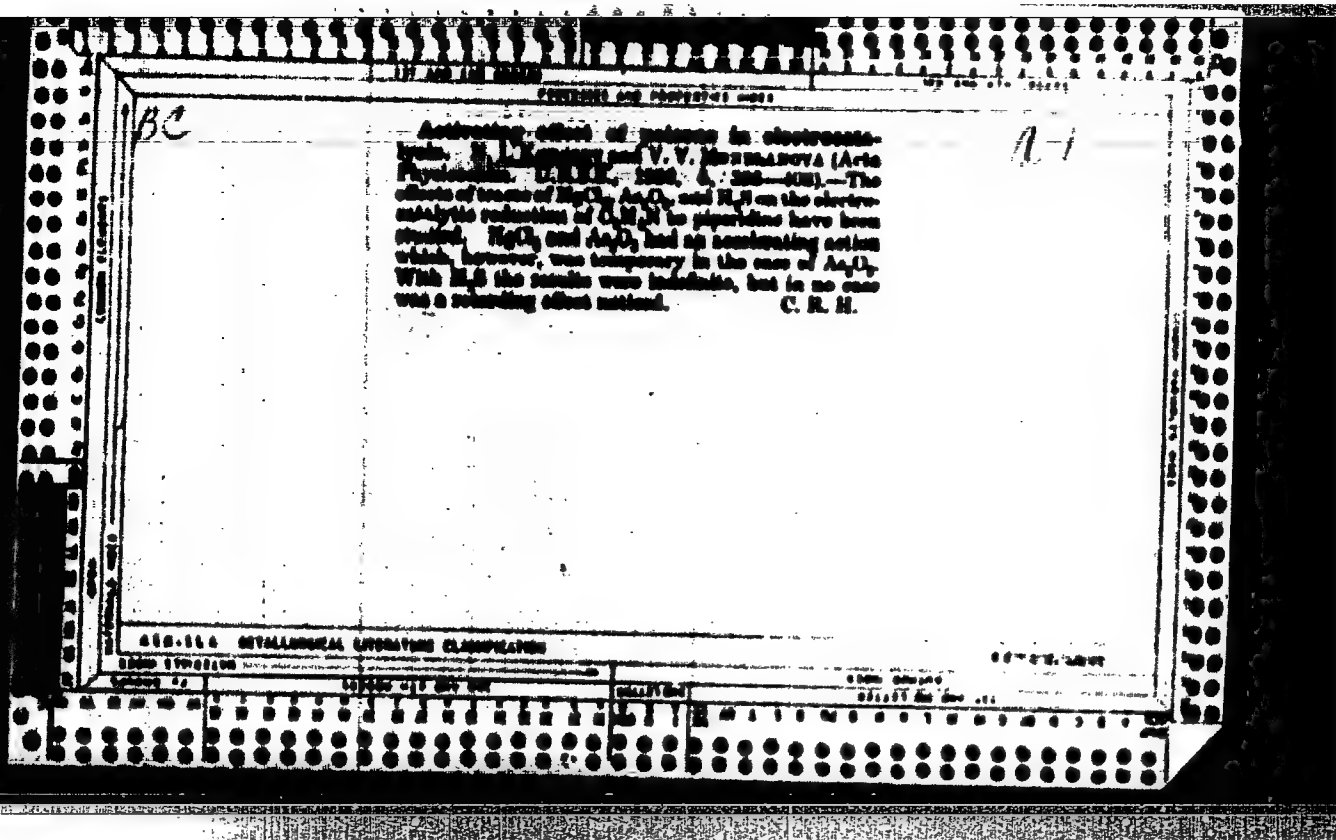






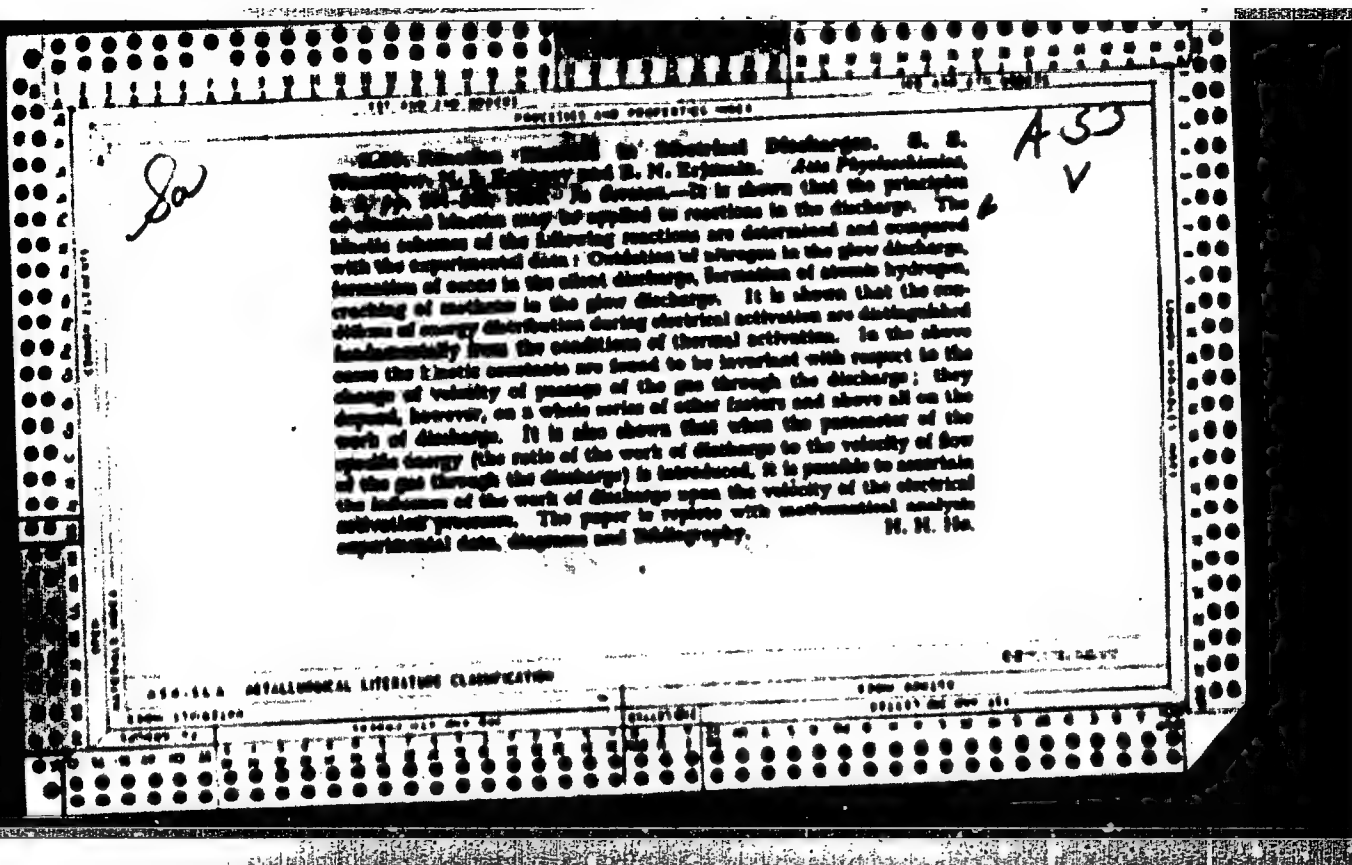


KOBOZEV, N.I.	PROCEEDINGS AND PROCEEDINGS
1-	<p>Thermodynamics of endothermic processes of nitrogen fixation. N. I. Kobozev, S. S. Vost'ev and Ya. S. Kozlovskii. <i>Acta Physicochim.</i> (U. R. S. S. R. 3, 345 62 (1956) (in English). Yields and energy and material expenditures for the reactions <math>N_2 + 1/2 O_2 = 2NO</math> (I), <math>N_2 + 2CO = 2CO + 2NO</math> (II), <math>N_2 + 2C = 2C + 2N_2</math> (III), <math>N_2 + C_2H_4 = 2HCN</math> (IV) and <math>N_2 + C_2H_6 = 2HCN + 2H_2</math> (V) are summarized. Failure to consider side-reactions gives results much above the actual yields, but much closer agreement is obtained when these are taken into account. I is the only feasible method for direct synthesis of NO and the only. <math>N_2 + 1/2 O_2</math> is best. III is the most valuable form of fixed N. Production in the glow discharge under special conditions requires 720 004 cal. It may be possible to decrease this in the cold glow discharge so that it could compete with III, synthesis. II is not expedient because of the low yield and large waste of energy and raw material consumed. The raw materials for III and IV are too expensive, but V gives only a slightly lower yield, the <math>C_2H_4</math> is cheap and the by-products, II, and <math>C_2H_6</math>, are valuable.</p> <p style="text-align: right;">H. N. Rudstam</p>
ASD 12A METALLURGICAL LITERATURE	CLASSIFICATION



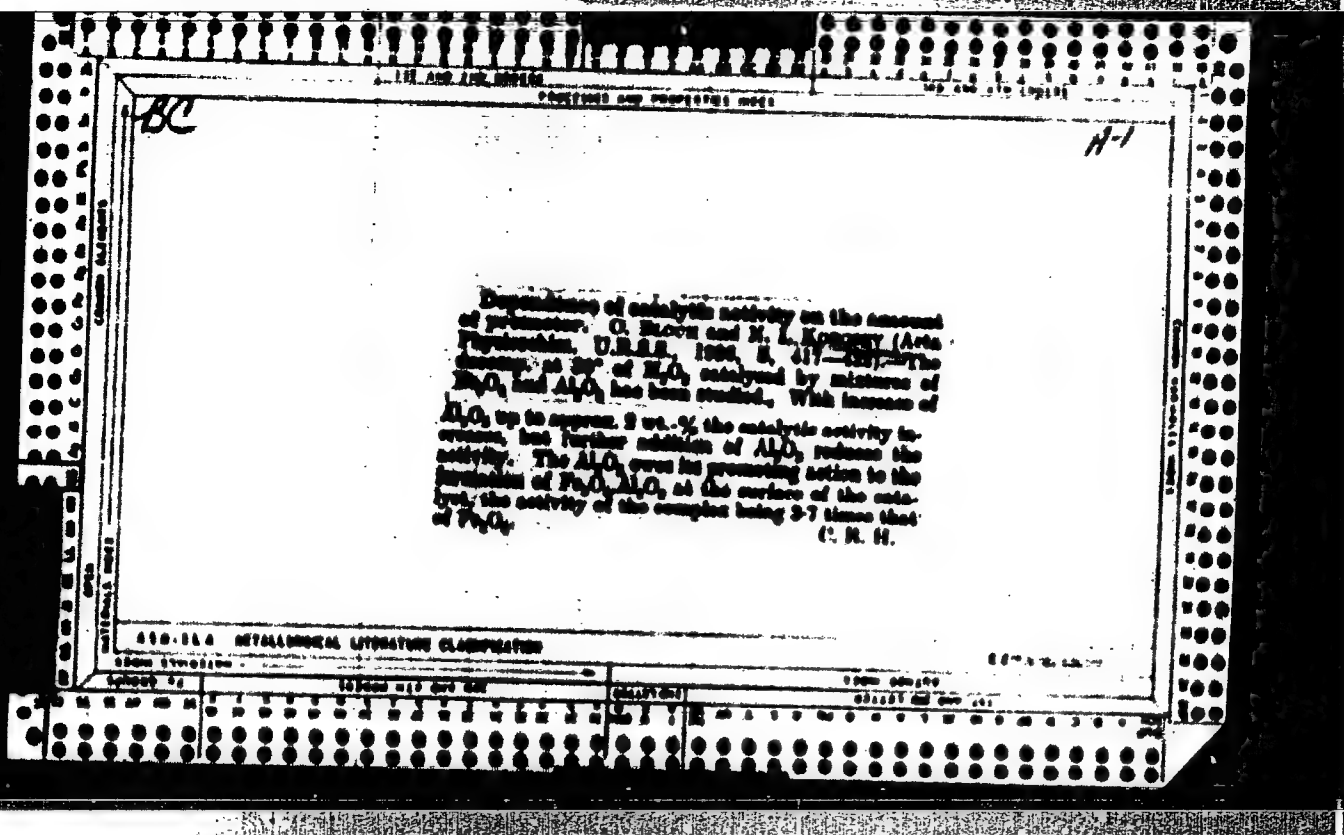
<p>111 200 120 071101</p> <p>PROCESSED AND DOCUMENTED 1000</p>	
<p>CA</p>	<p>2</p> <p>Mechanism of the inhibiting effect of promoters on the reduction of iron compounds catalysts. N. I. Kabanov. <i>Acta Physicochim. U. R. S. S. R.</i> 33:4, 839-40 (1959) (in Russian).—A theoretical discussion of the results of Natanov (C. A. 34, 4830) and Dubrovskaya and Kabanov (following abstr.). H. W. Rowley</p>
<p>ASB-514 METALLURGICAL LITERATURE CLASSIFICATION</p>	
<p>FROM 51002110</p>	
<p>100000 42 100003 411 000 001 000001 001</p>	

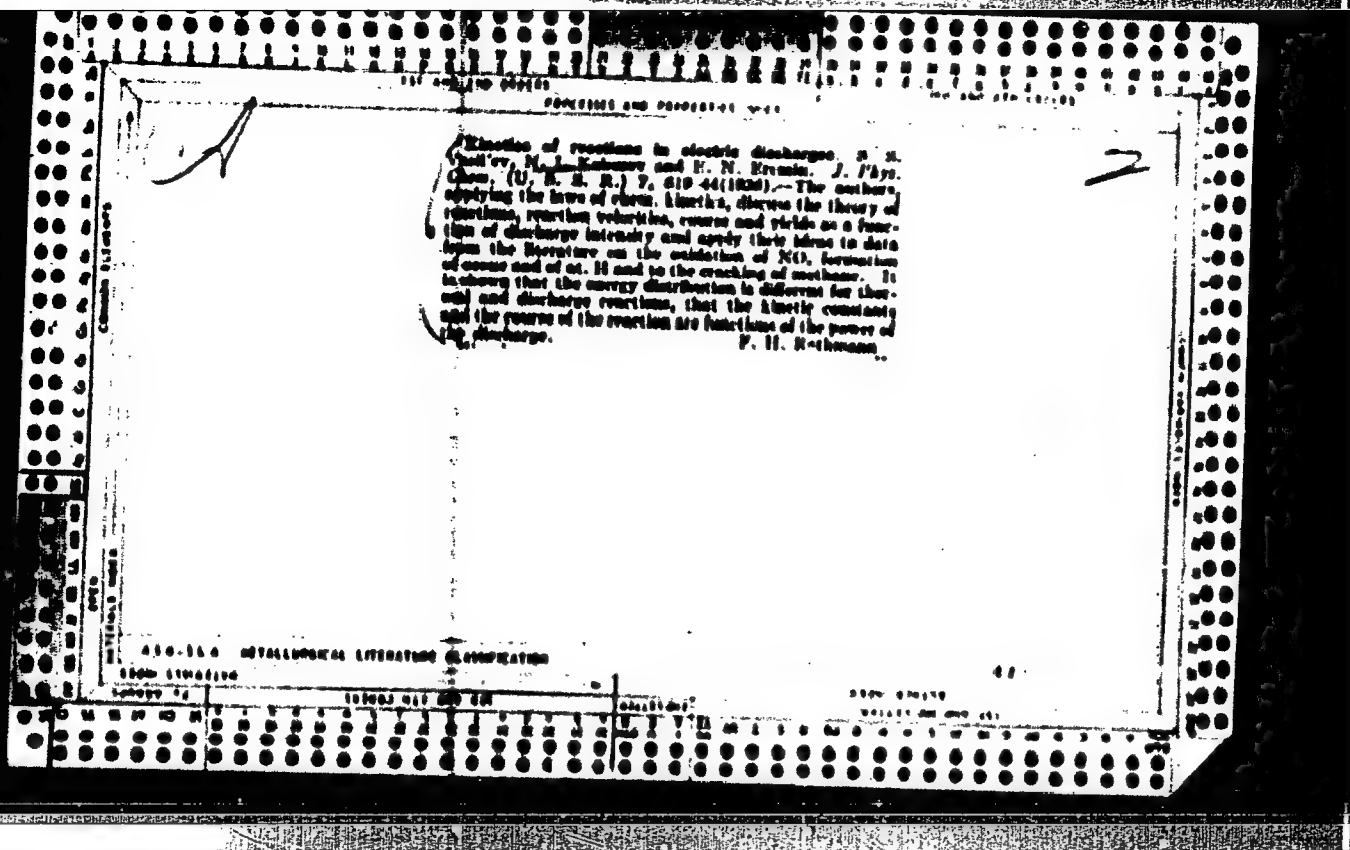


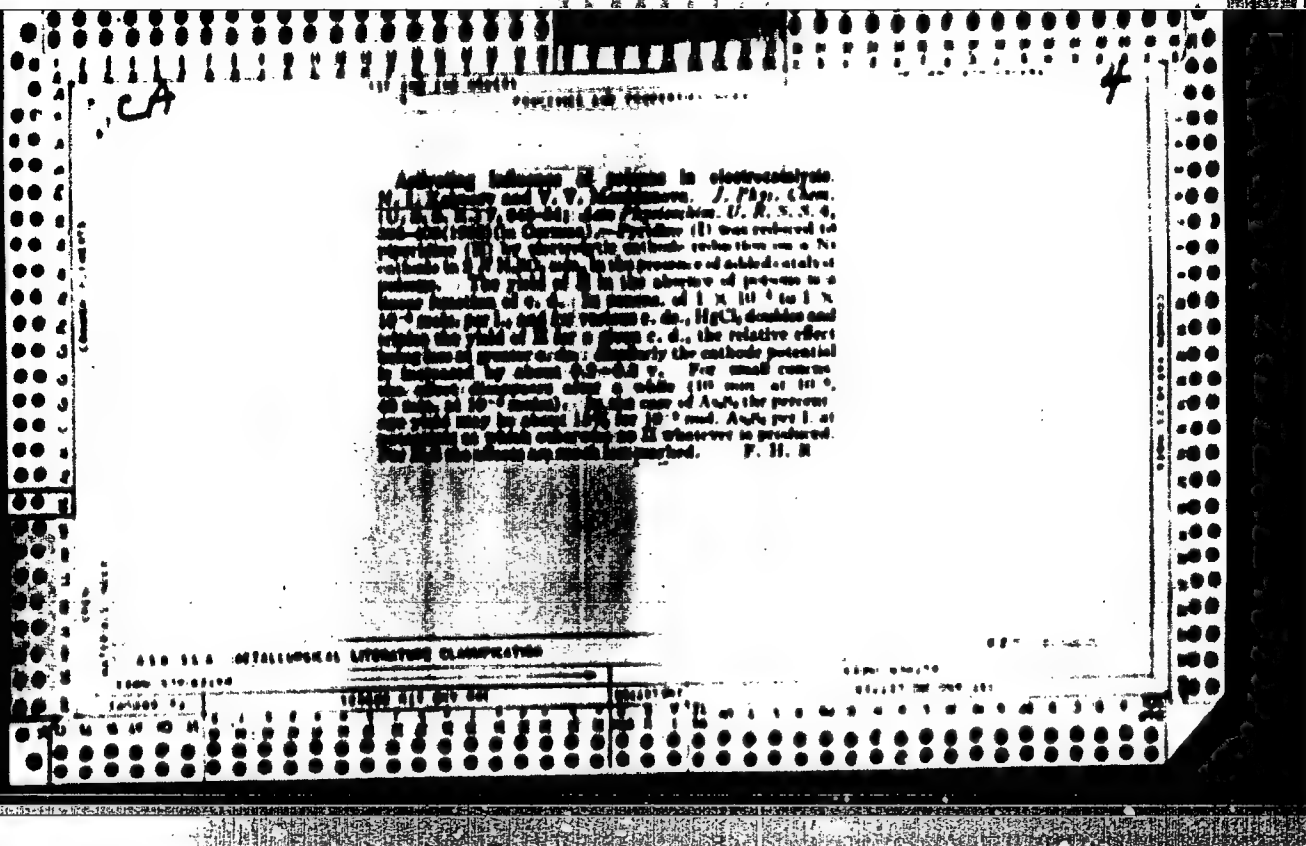


КОБОЗОВ, Н. И.

Use of the Skin Effect in Investigating Thin Metal Layers. U. G. 416-41 and N. I. Kobozov (*Acta Physicochimica U.S.S.R.*, 1936, 8, (2), 243-248 (in German)) and *Zhurnal Fizicheskoy Khimii* (*J. Phys. Chem.*), 1936, 8, (5), 208-235 (in Russian).—Electrolytic films of iron on platinum and silver were studied by the method of high-frequency resistance measurement based on the skin effect. The change in high-frequency resistance depends on the change in the magnetic permeability ( $\mu$ ) of the films. The variation of  $\mu$  with the thickness of the layer, the current density during electrolysis, and time of ageing after deposition are discussed in the light of Becker's theory of film structure (*E. Physik*, 1930, 68, 283) and W. Rindberg and W. F. Fyfe's data (*Met. Abs. (J. Ind. Metals)*, 1932, 26, 506). The method may be used for studying the kinetics of layer crystallization; thus in the formation of iron-platinum alloy on annealing the upper limit of the diffusion rate was found to be  $10^{-4}$  cm./second. Deposition of a zinc film on iron by electrolysis is accompanied by diffusion of zinc into the iron.—N. A.





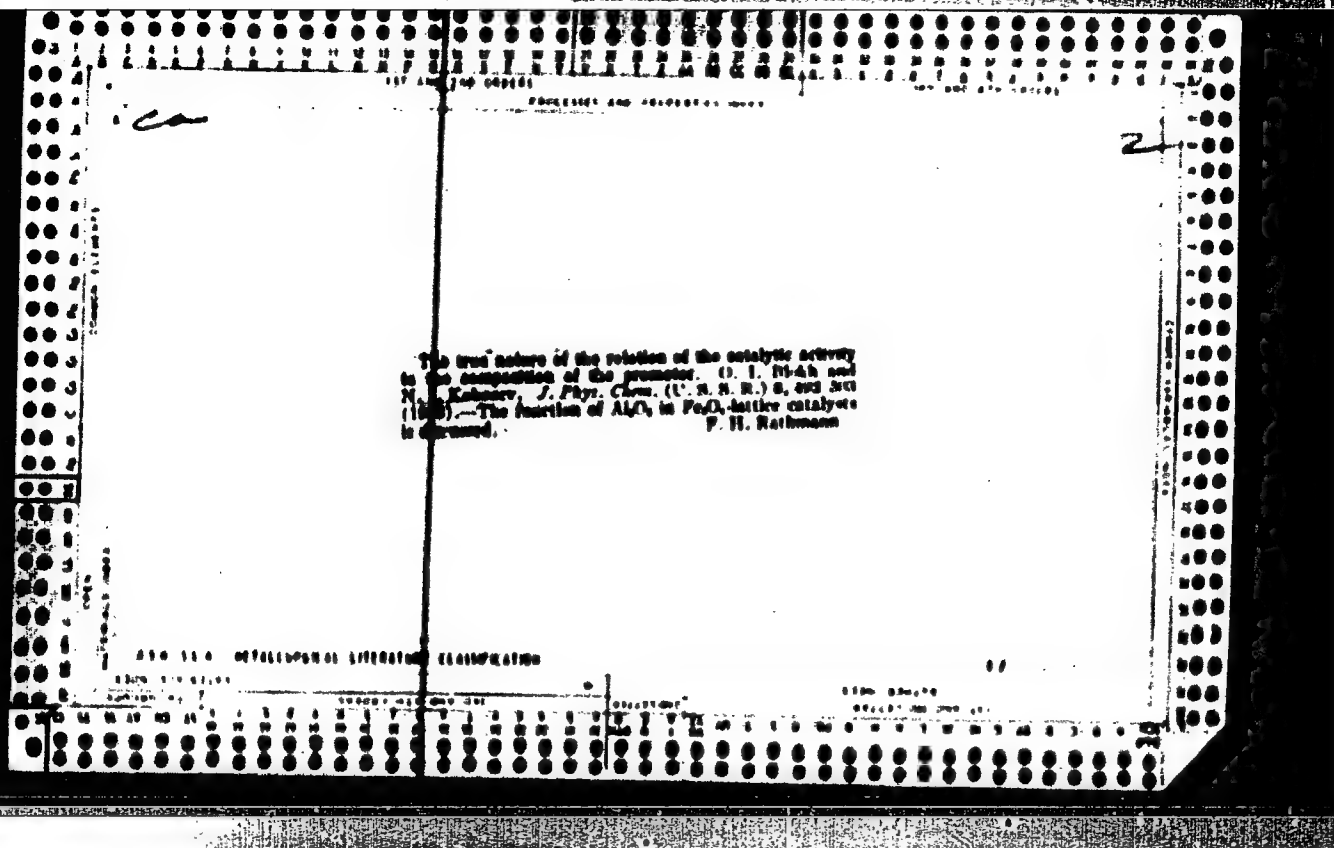


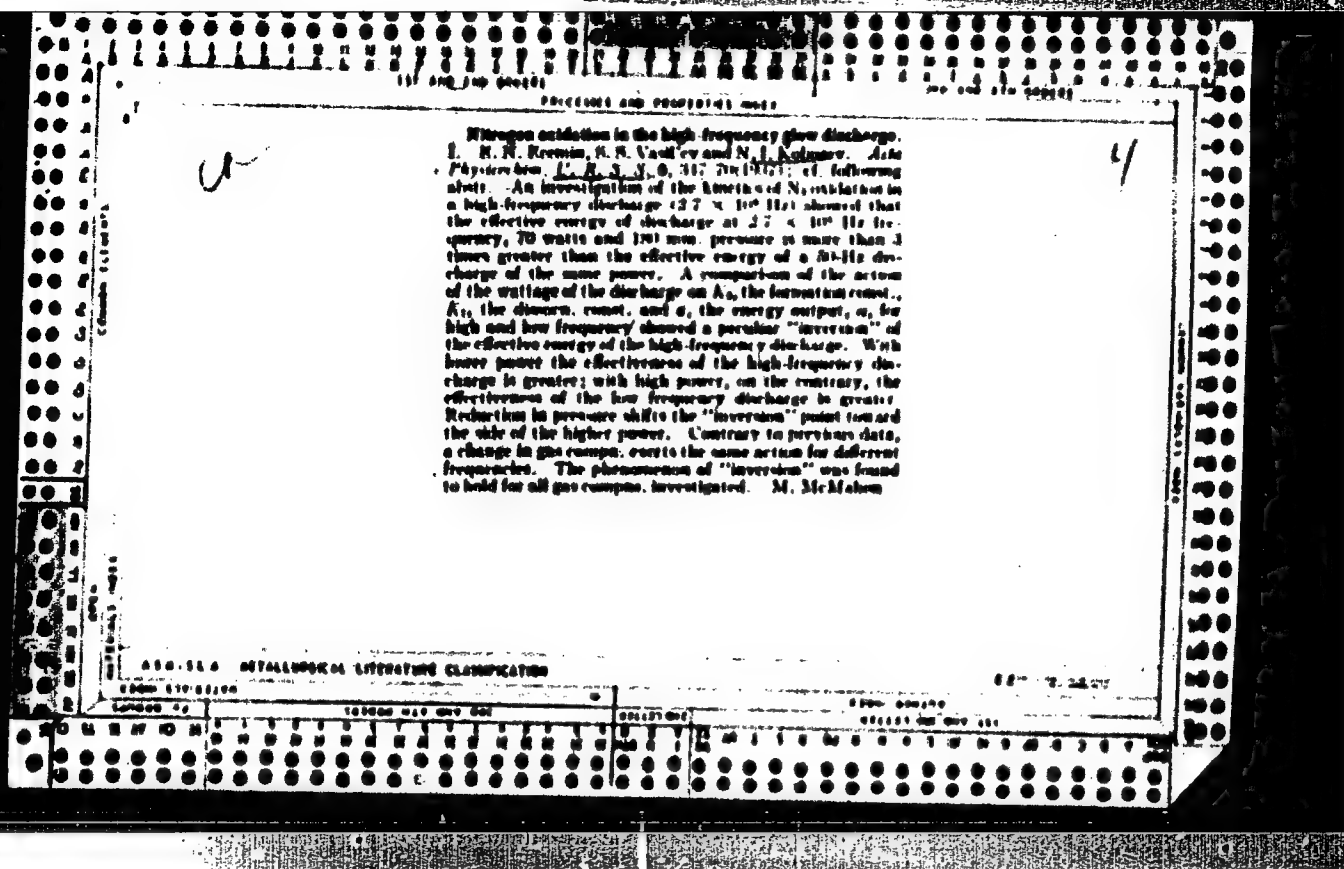
*α*

18

The mechanism of the retarding effect of promoters on the reduction of iron-oxides catalysts. N. I. Katsary. *Phys. Chem. (U. S. S. R.)* 8, 226-231 (1967); *R. C. A. 20, 7607*.—Data are given for the retarding effects of  $K_2O$ ,  $BeO$ ,  $KF$  and  $Al_2O_3$  on the reduction of  $Fe_2O_3$  by  $H_2$  and of  $MgO$  on that of  $FeO$ . Promoter action of the catalyst results when the added substance is surface-active and reduces the rate of reduction of the iron oxide.  
P. H. Rothmann

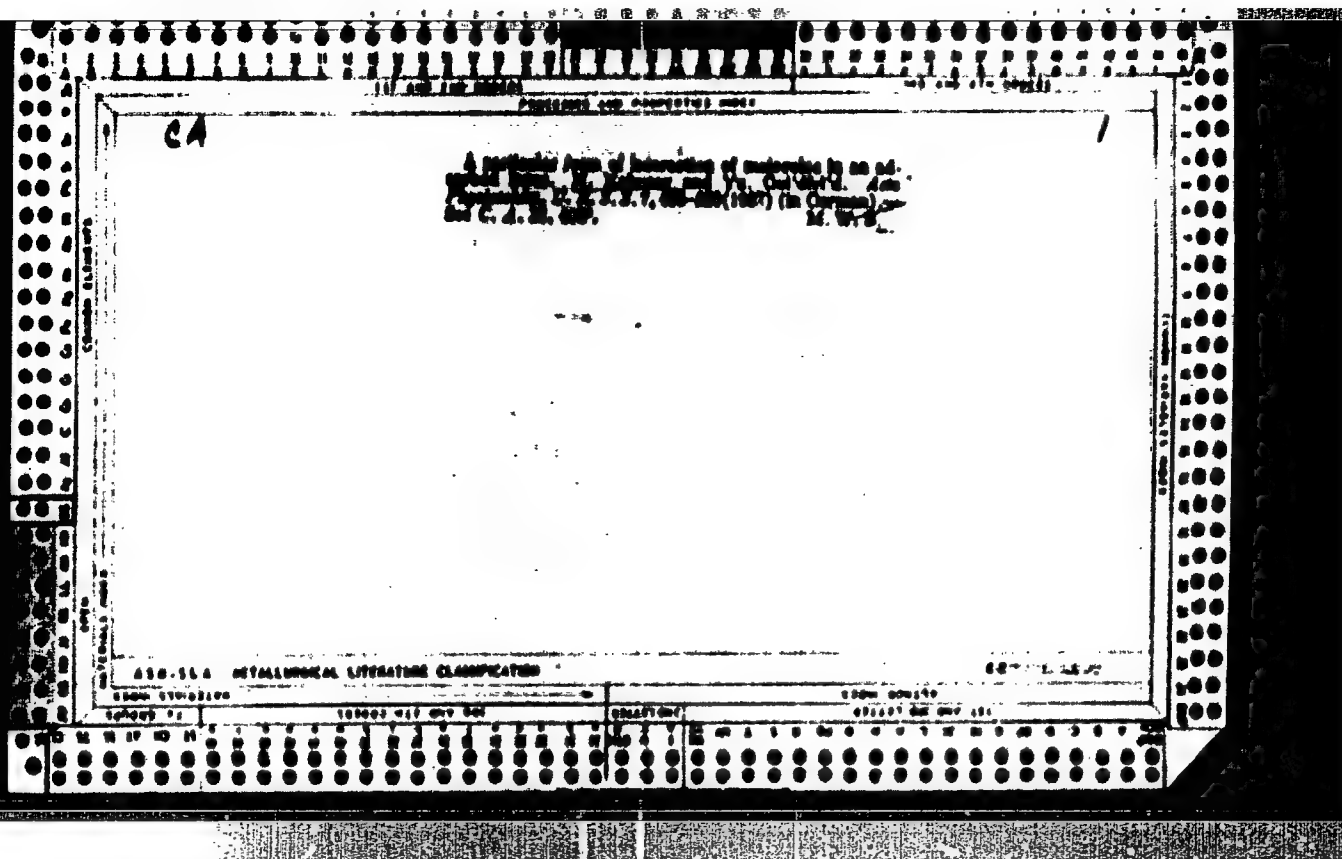
ALSO SEE METALLURGICAL LITERATURE CLASSIFICATION

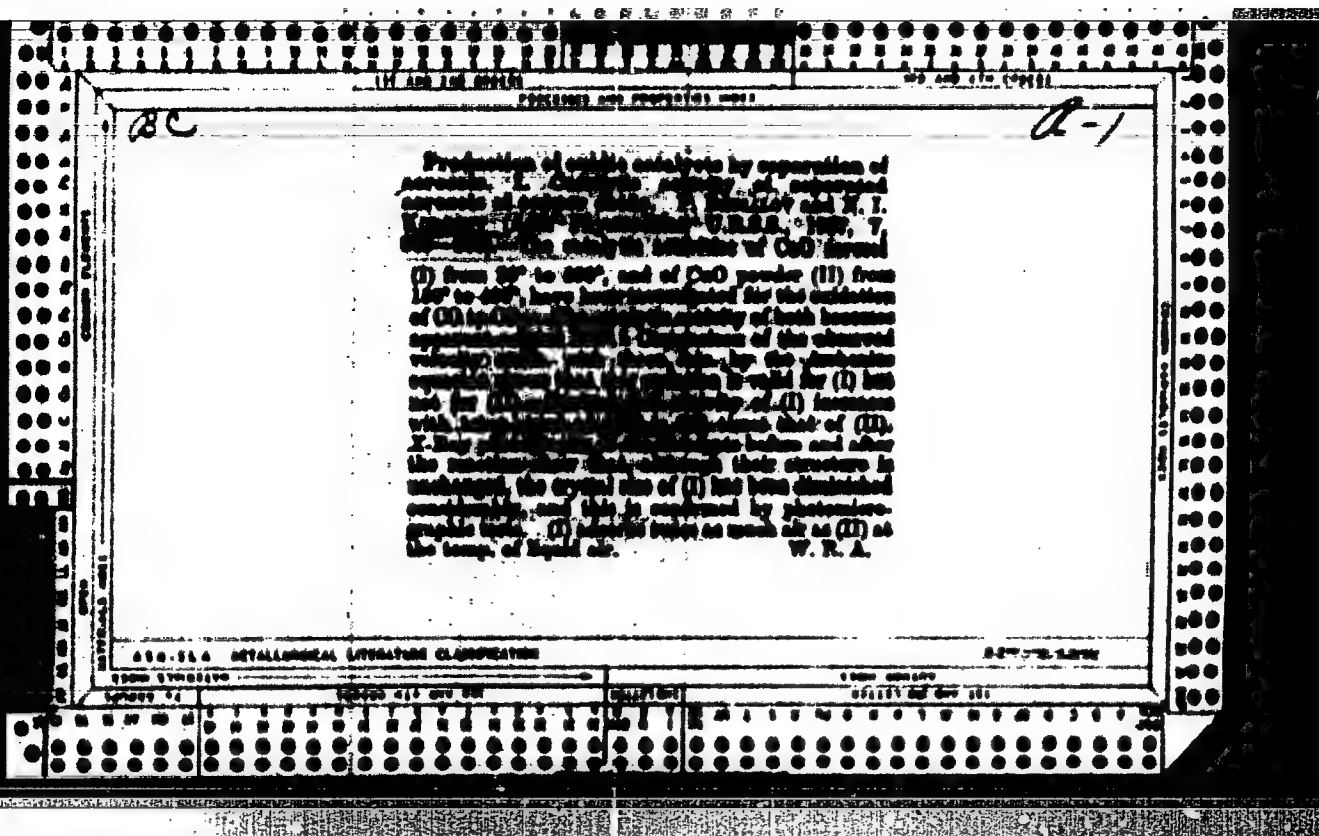




*ca*

**Nitrogen oxidation in a high frequency glow discharge**  
 H. H. Proulx, R. S. Vasilev and N. I. Lidsman  
*J. Phys. Chem.* (U.S.S.R.), 61, 1124 (1967)  
 U.S.S.R., 61, 1124 (1967); cf. preceding abstr.  
 —At from 70 to 100 mm. pressure and 70 w., a  
 high-frequency ( $2.7 \times 10^6$  Hz) discharge is 3 times as  
 efficient as a 10-Hz discharge. Above 90 w., the  
 low-frequency discharge is the more effective. A com-  
 parison of the effects of  $2.7 \times 10^6$ ,  $5 \times 10^6$ ,  $7 \times 10^6$  and  $10 \times 10^6$  Hz  
 frequencies shows that the effect is the same in all cases  
 and hence not due to resonant effects. No dif-  
 ference in effect was observed when either internal or  
 external electrodes were used. At higher wattages the  
 max. yield is obtained at higher relative currents of  $O_2$ .  
 Electron temp. as ded. from the spectra of the dis-  
 charge is higher at 70 w. high frequency than at low  
 frequency and is higher at low voltage than at high  
 voltage, and higher at low pressure than at high pressure.  
 F. H. Rothmann



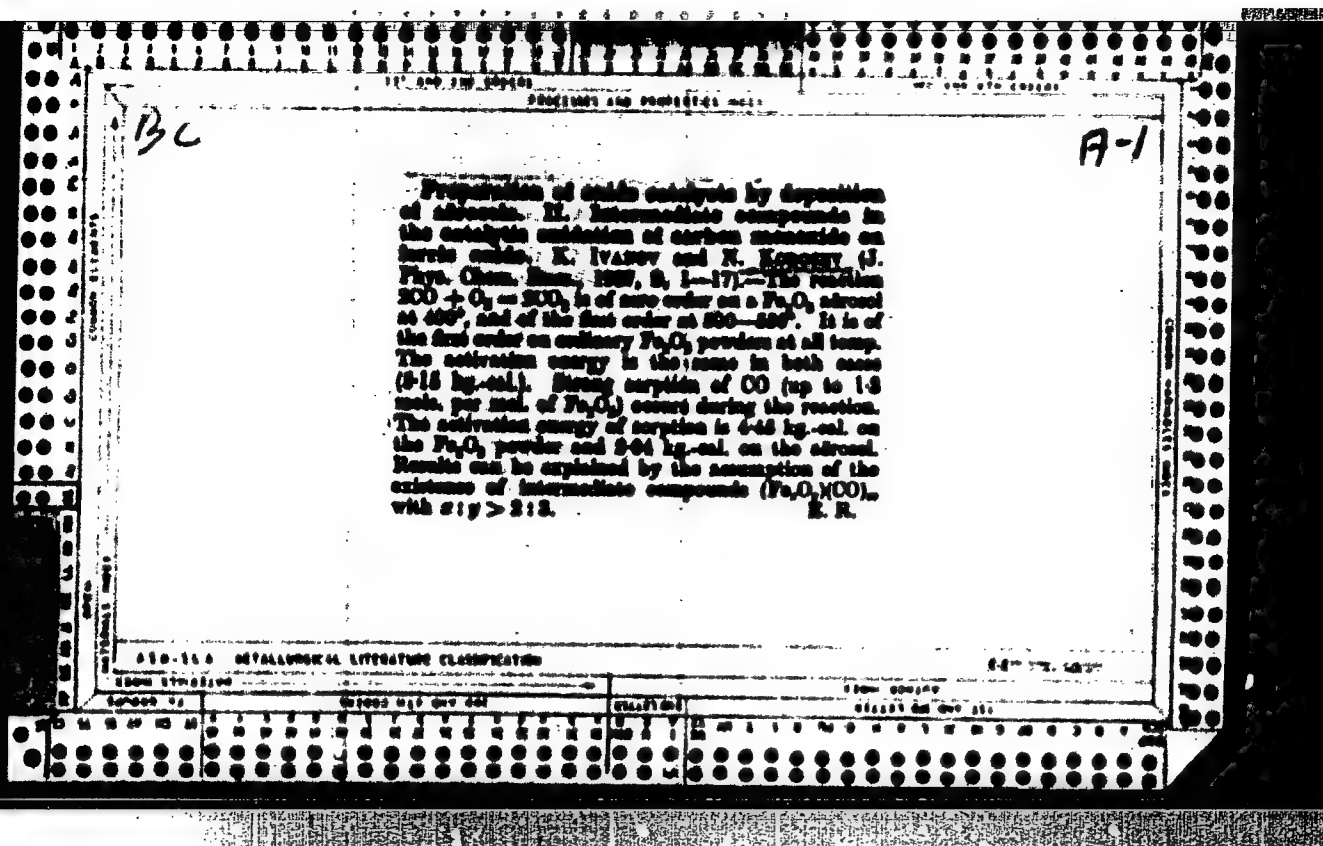


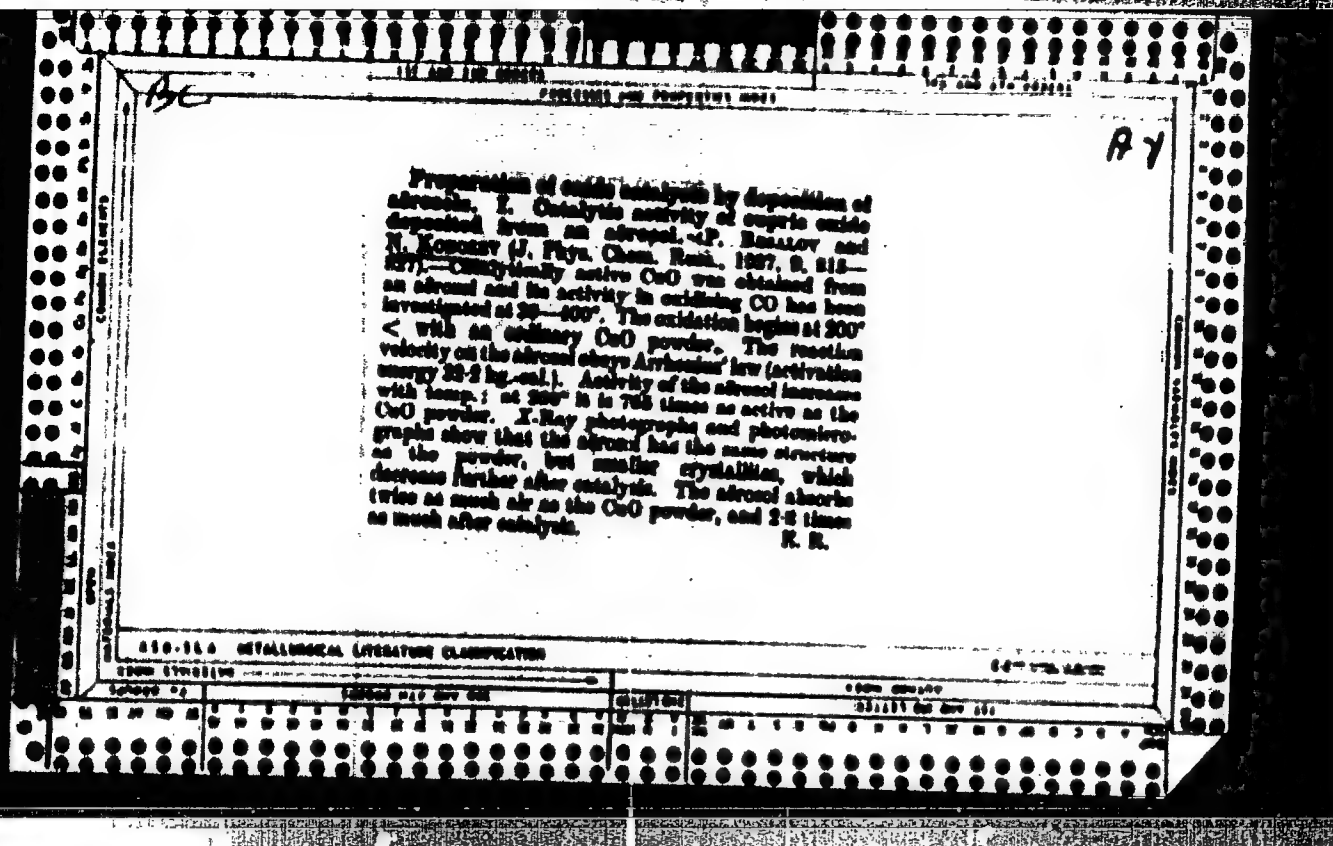
1. Influence of the current density on the yield of acetylene in electrical cracking of methane. N. S. Vond'ry, S. I. Kabanov and N. N. Kravtsov. *Abstr. Turkiye Toprak* 8, 15 (1967). A criticism of the above paper. A. A. Podgorny

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

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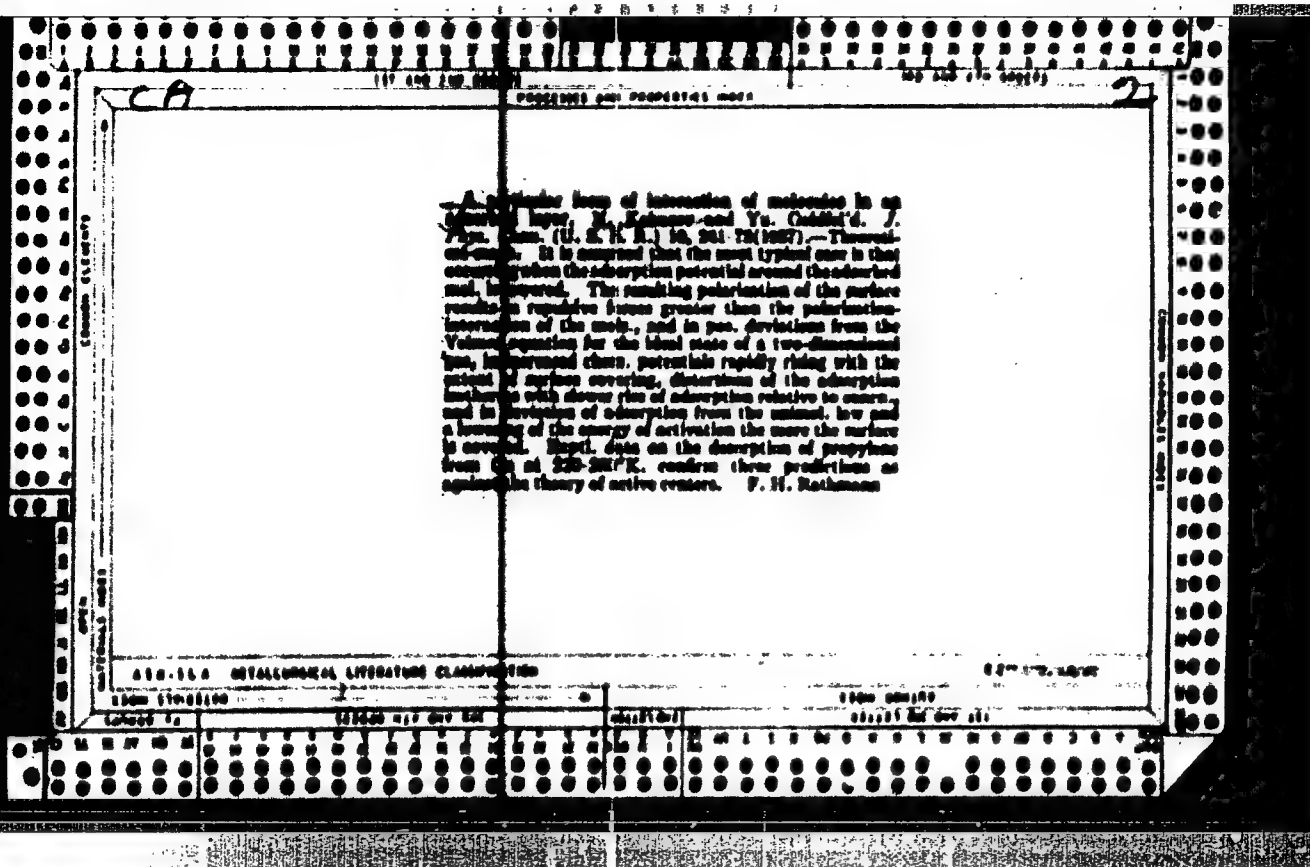


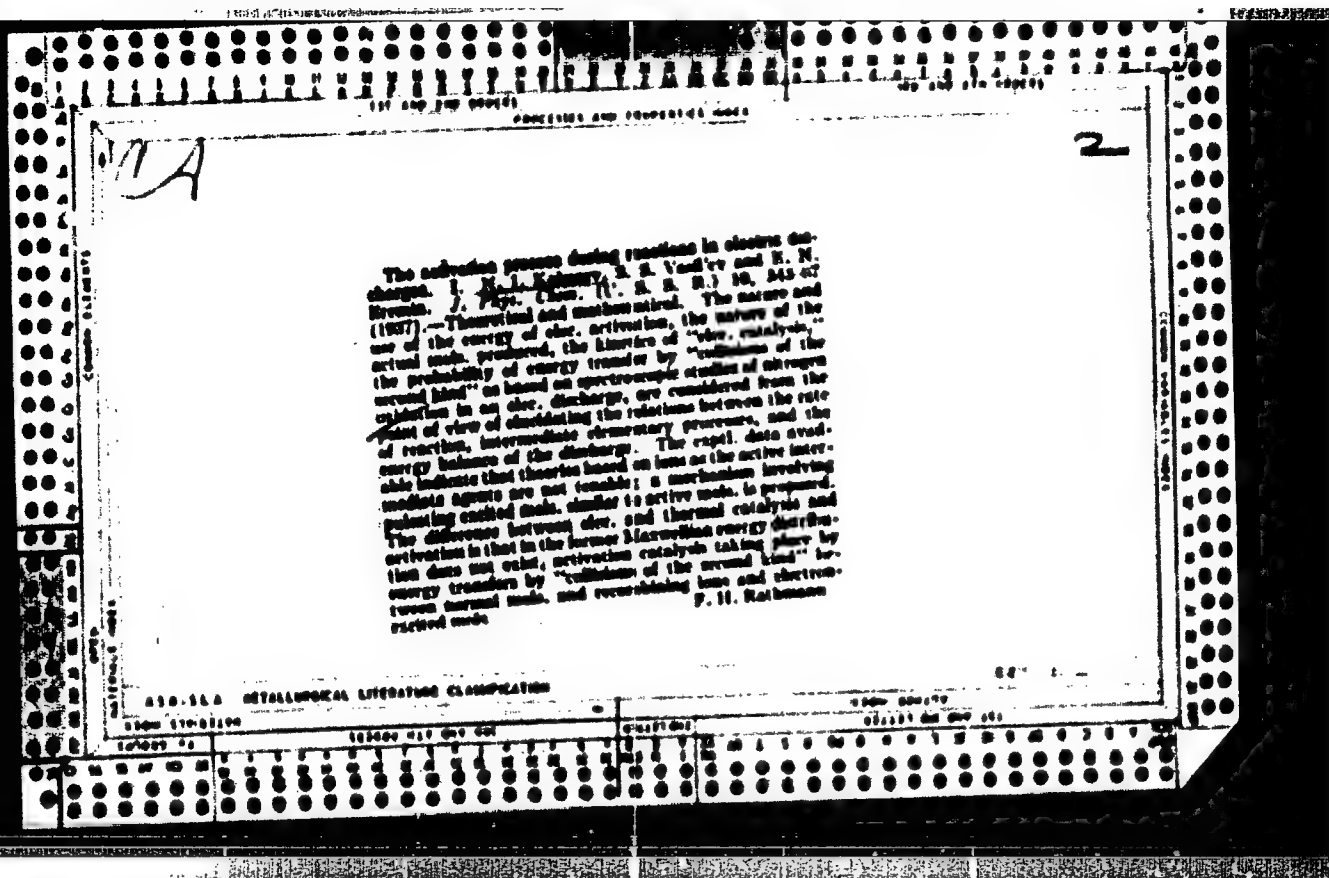


1. Preparation of oxide catalysts by precipitation of solutions. II. The formation of interphase compounds during the catalytic oxidation of carbon monoxide on iron oxide. E. Ivanov and M. Kabanov, *J. Phys. Chem.* (U. S. S. R.) 66, 1-17 (1962). On a  $\text{Fe}_2\text{O}_3$  aerosol catalyst at 250-450° the  $\text{CO} \rightarrow \text{CO}_2$  oxidation obeys a nearly zero-order kinetic equation, while on powder at 130° to 400° it obeys a first-order equation. On both catalysts the activation energy is  $E = 5150$  cal. while  $K_1/K_2 = \log K_1 - E/4.5T$  is 4.14 for aerosol and 3.98 for the powder. X.

ray and photomicrographic studies of both catalysts show that during the catalysis an intense process of crystal structure reconstruction takes place so that the crystal grain size is completely altered. The cubic aerosol crystals of  $10^{-4}$  cm. change to rhombs of  $10^{-4}$ , while the rhombic  $\text{Fe}_2\text{O}_3$  powder of  $10^{-4}$  cm. grains also recrystallizes in the same system to a size of  $10^{-4}$  cm. The effect of heating the powder to 1100° is the same as the process of heating the powder to 1100° is the same as the process of heating the powder to 1100°.  $\text{CO}$  is so strongly adsorbed by  $\text{Fe}_2\text{O}_3$  catalytic reaction.  $\text{CO}$  is so strongly adsorbed by  $\text{Fe}_2\text{O}_3$  that definite stoichiometric interphase compound formation of an  $\text{Fe}_2\text{O}_3(\text{CO})$  type must be assumed. The adsorption may also be considered as an activated adsorption with  $E = 4450$  cal. for the powder and 3000 cal. for the aerosol. The mechanism of the  $\text{CO} \rightarrow \text{CO}_2$  oxidation itself is assumed to involve the  $(\text{Fe}_2\text{O}_3)(\text{CO})$  adsorption phase as a step. Hsh.

Y. M. Kachmann





KOBOZEV, N. I.

The electrolytic oxidation of ammonia to ammonium nitrate. N. I. Kobozev, Y. V. Montanero and A. L. Shcherbak. J. Chem. Soc. (U. S. S. R.) 10, 1367-1371 (1967). NH<sub>3</sub> is first oxidized on a Fe anode in a 2-compartment cell. The cathode is a stirred Pt<sub>2</sub> anode of NH<sub>4</sub>NO<sub>3</sub> 10% (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> as a catalyst. The cathode is to Pt<sub>2</sub> NO<sub>3</sub> and a 2-pump solution discharge gives best results. The rate has little effect on the reaction. NH<sub>3</sub> is passed into the acidic compartment during the reaction to reduce reduction of NO<sub>3</sub> and keep the pH at about 8.62. About 75% of the NH<sub>3</sub> is oxidized to NH<sub>4</sub>NO<sub>3</sub>. H. M. Leicester

ASH 55.6 METALLURGICAL LITERATURE CLASSIFICATION

co

A theory of the formation of catalytically active "ensembles" on surfaces. I. M. L. Kohnen. *Adv. Phys. Chem.*, U. R. S. S. R. 803-84(1980)(in English). Assuming that the active locus of the catalytic activity is an amorphous adsorbed phase organized into ensembles obeying the laws of d. Section, K. develops a theory that explains the optimum activity for each system, dispersity, and temp. of prop. and for the effects of promoters and the order of introduction of the reacting substances. The cryst. carrier data, only the no., but not the properties, of the ensembles. An equation is given for the max. activities of two catalysts. This equation helps to account for the change in the order of catalytic reactions. Cf. Kohnen and Nohren, C. A. 24, 1880, 1980. H. An application of the theory to the synthesis of ammonia and to the catalytic and electrocatalytic hydrogenation of the ethylene bond. H. J. Kohnen and I. L. Klyuchko-Curvich. *Ibid.* 18, 1-84(1980)(in English). On the basis of their own exp. data as well as that from other authors and using the equation previously derived (cf. preceding abstr.) K. and K.-O. find the av. no. of atoms in active ensembles to be 3 Fe for the reaction  $N_2 + 3H_2 = 2NH_3$  (cf. K.-O. and K.); 3 Fe for  $2H_2 + O_2 = 2H_2O$  (cf. Danov and Koshchev, C. A. 26, 1880

and 84107); 2Pd for fumaric acid hydrogenation (cf. Schuster and Zimmermann, C. A. 24, 3887); 4Pt or 4 Ni for  $C_2H_4 + H_2 = C_2H_6$  (cf. Danov, C. A. 27, 8888); 2 Fe or 3 Pt for the electrocatalytic hydrogenation of succinic acid (according to Mandelova, Kohnen and Philippovich) in the presence of traces of  $HgCl_2$  and  $K_2AsCl_4$  catalyst poisons as activators. For reactions of  $H_2$  with olefins, male, the ensembles contain 3 atoms, for addn. to the C=C bond they probably contain 3-4 atoms. The promoting action of  $PdO_2$  in synthetic ammonia catalyst is explained as a result of the pre-existing three-atom iron ensembles in  $Fe_2O_3$ , that of  $Al_2O_3$  to a protecting action against melting or evapn. of the ensembles. F. H. Rothmann

Activation process in reactions in electric discharges.  
 11. N. I. Kabanov, B. B. Vasil'ev and K. N. Kremen. *J. Phys. Chem.* (U. S. S. R.) 11, 45 (1958); cf. C. A. 52, 19071. Oxidation of  $N_2$  is discussed. The elec. energy supplied to the discharge app. is chiefly spent in (a) heating the electrodes, (b) light emission by excited mols., (c) ineffective excitation of  $O_2$ , and in (d) deactivation of active  $N_2$  mols.; the remaining energy (e) is used for NO synthesis. The energy loss (a) explains the increase of the yield of NO per erg supplied with increasing distance between the electrodes. The loss (c) is partly responsible for the dependence of the NO yield on the ratio concn. of  $O_2$  concn. of  $N_2$ , the yield increasing with that ratio at high c. d. and high pressures and decreasing with it at low c. d. and low pressures. Calcn. of the energy (e) shows that the activation energy has a normal value; hence the active mols. in the discharge are of the same kind as those in thermal reactions. R. C. F. A.

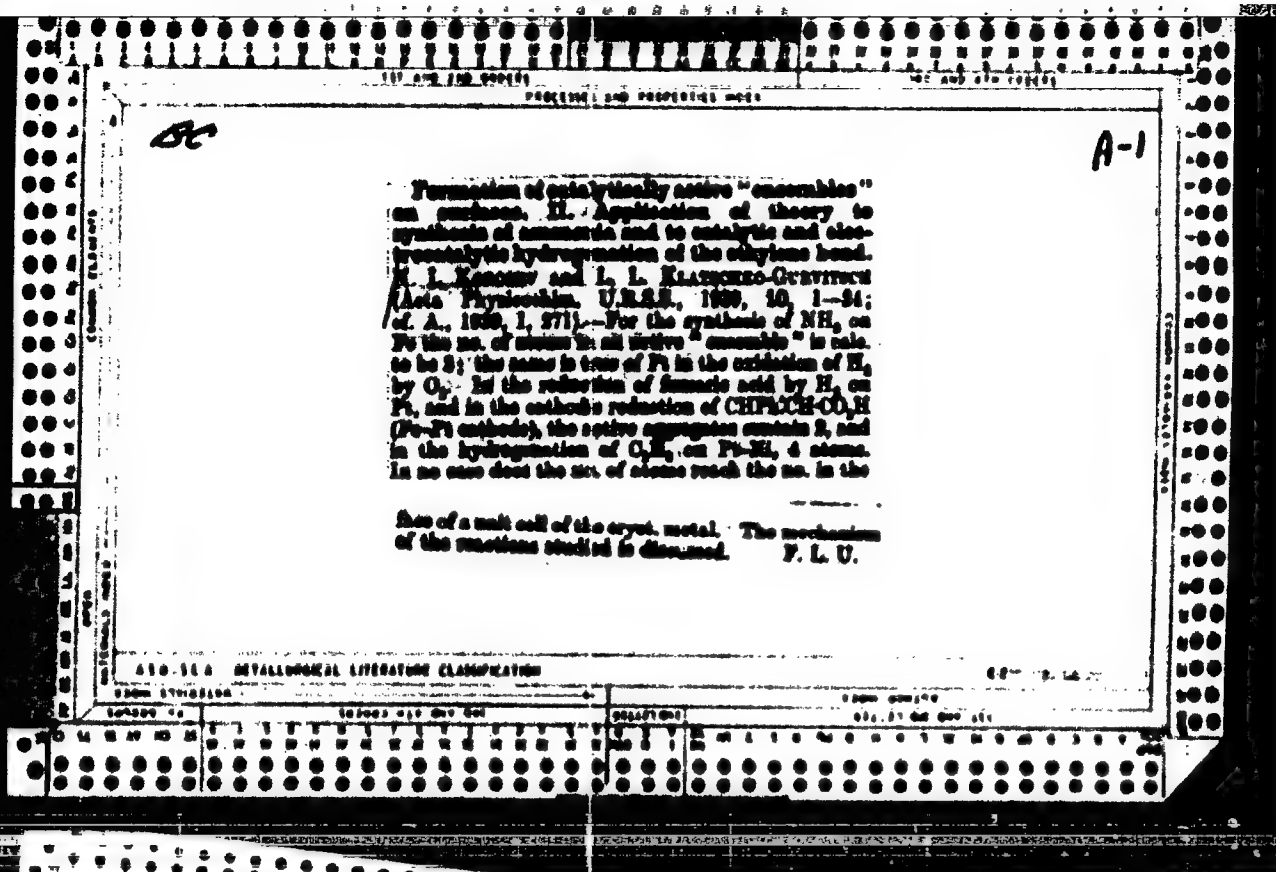
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A correction to the article "Activation process during reactions in electric discharges" [M. I. Kuznetsov, N. N. Yash'ev and N. N. Sivovskiy. *Zh. fiz. khim.* (1978) 52, 1111 (1978)] of V. A. An, *ibid.*, 1978, 52, 1111. The value of the spectrum appearing during the oxidation of N should be corrected to read: "To the emission energy of 1 e.v. corresponds the wave length 12,400 Å. The continuous spectrum found during the elec. oxidation of N is distributed at 300 nm. Hg into the region of 4000-6000 Å. wave lengths." After a further discussion K. V. and N. come to the conclusion that the difference between the full activation energy of N mole, calcd. from the wave lengths of the continuous spectrum, and the energy transferred during the oxidation of "the second kind" can be regarded as the thermal energy of activation which upon 100 Hz in the limits from  $4.27 \cdot 10^{-2} = 1.07 \text{ e.v.} = 21,000 \text{ cal/mol. to } 2.50 \cdot 10^{-2} = 0.21 \text{ e.v.} = 4,800 \text{ cal/mol.}$

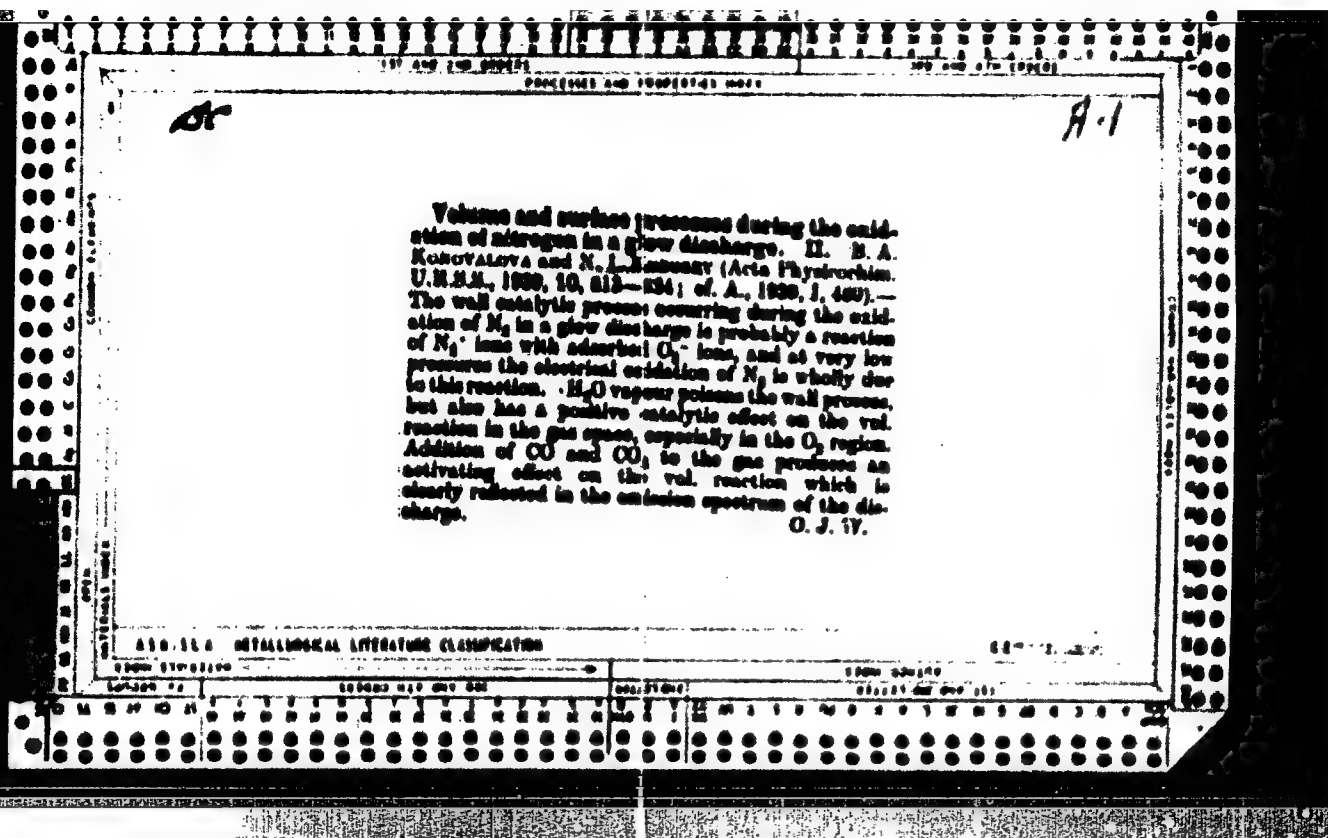
W. N. Sivovskiy



<p>BC</p> <p>Q-1</p> <p>Volume and surface processes in the oxidation of nitrogen in glow discharge. I. B. A. Konovalova and M. I. Konovalov (J. Phys. Chem. Russ., 1966, 40, 257-260). Pressure of 4 mm. Hg the rate of oxidation of dry <math>N_2</math> by <math>O_2</math> shows a max. at 80% <math>N_2</math>. <math>H_2O</math> decreases the rate between 40 and 90% of <math>N_2</math> and increases it at other <math>[N_2]</math>: 2% of <math>H_2O</math> is as active as 1%. <math>CH_4</math> inhibits the reaction <math>&gt;</math>, and <math>NH_3</math> and <math>H_2</math> <math>&lt;</math>. <math>H_2O</math>. An increase of the solid surface (quartz, glass, or silica) accelerates the oxidation, especially in the presence of <math>H_2O</math>. It is supposed that <math>NO</math> is produced partly on the walls, the part of the reaction being inhibited by dipole mole., and partly in space. <math>H_2O</math> or <math>NH_3</math> does not affect the latter part since they do not alter the emission spectrum of the discharge. J. J. E.</p>	
<p>11-11-66 METALLOGICAL LITERATURE CLASSIFICATION</p>	



Volume and surface processes during the oxidation of nitrogen in a glow discharge. I. B. A. KONOVALOVA and N. I. KONOVA (Acta Physicochim. U.R.S.S., 1936, 10, 631-633; cf. A., 1936, 1, 400).—The process is a combination of a vol. and a wall process, the latter being poisoned by polar mol. The investigation of the effect of polar mol. thus provides a method of separating the two processes. At low pressures 90% of the NO is produced by the wall process. Toxic mol. do not affect the spectrum of  $N_2$ . Activating mol., such as CO and  $CO_2$ , affect the spectrum and therefore influence the vol. process. The dissociation of NO in the discharge is not poisoned by  $H_2O$ , and hence is not a wall reaction. The results differ from those of Wenthaven *et al.* (A., 1930, 653), the difference being explained. A. J. M.







AC		A-1	
<p>Volume and surface processes in the oxidation of nitrogen in the glow discharge. II. R. A. KONOVALOVA and N. I. Kiselev (J. Phys. Chem. Russ., 1939, 13, 286-300).—The part of the formation of NO taking place at the surface is presumably due to a reaction between <math>N_2^+</math> and adsorbed <math>O_2^-</math> ions. The relation between the rate of this surface reaction and the size of the reaction vessel is similar to that between the size of the vessel and the rate of recombination of ions as determined by the min. discharge potential. In mixtures containing much <math>O_2</math>, <math>H_2O</math> and <math>NH_3</math> increase the yield of NO: this is presumably due to oxidation of <math>N_2</math> by <math>H_2O</math> and, respectively, to oxidation of <math>NH_3</math>. <math>CO</math> and <math>CO_2</math> also raise the yield of NO. (Cf. A., 1939 I, 480.)</p> <p>J. J. B.</p>			
<p>Lab. Inorganic Catalysis Moscow State U.</p>			
<p>AST-55A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>FROM DIVISION</p>			
<p>EXAMINATION</p>			
<p>FROM DIVISION</p>			

<p>CA</p> <p>Activation process and the nature of the active centers in electrocatalytic hydrogenation. V. V. Mosolov, N. I. Kobayev and P. B. Filippovich. J. Phys. Chem. (U. S. S. R.) 11, 228-40 (1967). Data are given for the electrocatalytic hydrogenation of crotonic acid at electrodes with large (Cu, Ag, Hg, Pt, Au) and small (Ir, Fe) II overpotentials; and in the presence of catalyst poisons such as <math>K_2AsO_4</math> and <math>HgCl_2</math>. The "poison" poisons the first group of metals and activates the second up to a certain mass, concn., <math>1 \times 10^{-4}</math> mole/l. in alkali, <math>6 \times 10^{-4}</math> mole/l. in acid for <math>HgCl_2</math> on a Pt cathode and <math>1 \times 10^{-4}</math> mole/l. for <math>K_2AsO_4</math> on an Fe cathode, from which the Kobayev (cf. C. A. 52, 7584) "active ensemble" could be calculated: 2.1-2.4 for Pt, 2.0 for Fe. In this case the active centers have a lowered adsorption potential due to the effect of the "poison." On a clean Pt cathode the energy of activation between 0° and 51° is 5.56 cal., on a Hg thin film cathode 3.22, and on an amalgamated Pt cathode 1.81 cal./mol. Comparison of the effects of poisoning of polished surfaces of smooth and of platinum-platinum indicates that they are essentially the same. On Ag and Cu cathodes no reduction takes place with or without the presence of a "poison." Exptl. data are tabulated in 10 tables and 7 figs. The Hrdy-Orsz-Volmer and the Hrdy-Ridai concepts of electrode processes are not applicable to electrocatalytic reduction. F. H. R.</p>		<p>Lab. of Inorganic Catalysis, MTC, Chair of Gen. Phys. &amp; Colloid Chem., 2nd Med. Inst.</p>
<p>U-1619, 3 Jan 52</p>		

18

CH

Regenerating the iron catalyst for the synthesis of ammonia. M. I. Kabanov and L. L. Kiyekha-Ouvich. Russ. 26,224, Jan. 31, 1967. The spent catalyst is treated with iron carbonyl at temps. sufficiently high for the decomposition of carbonyl to metal and CO to form an active layer.

ASS-154 METALLURGICAL LITERATURE CLASSIFICATION

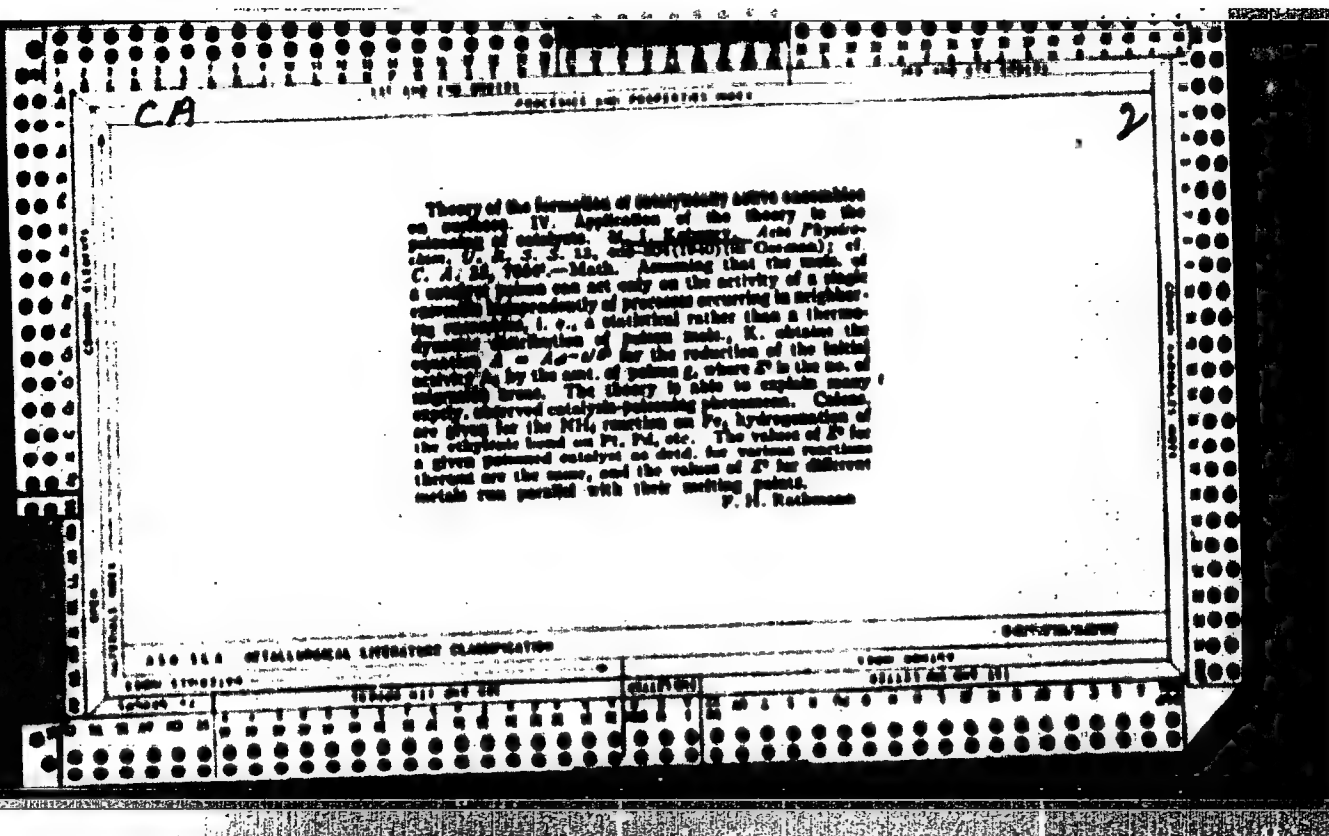
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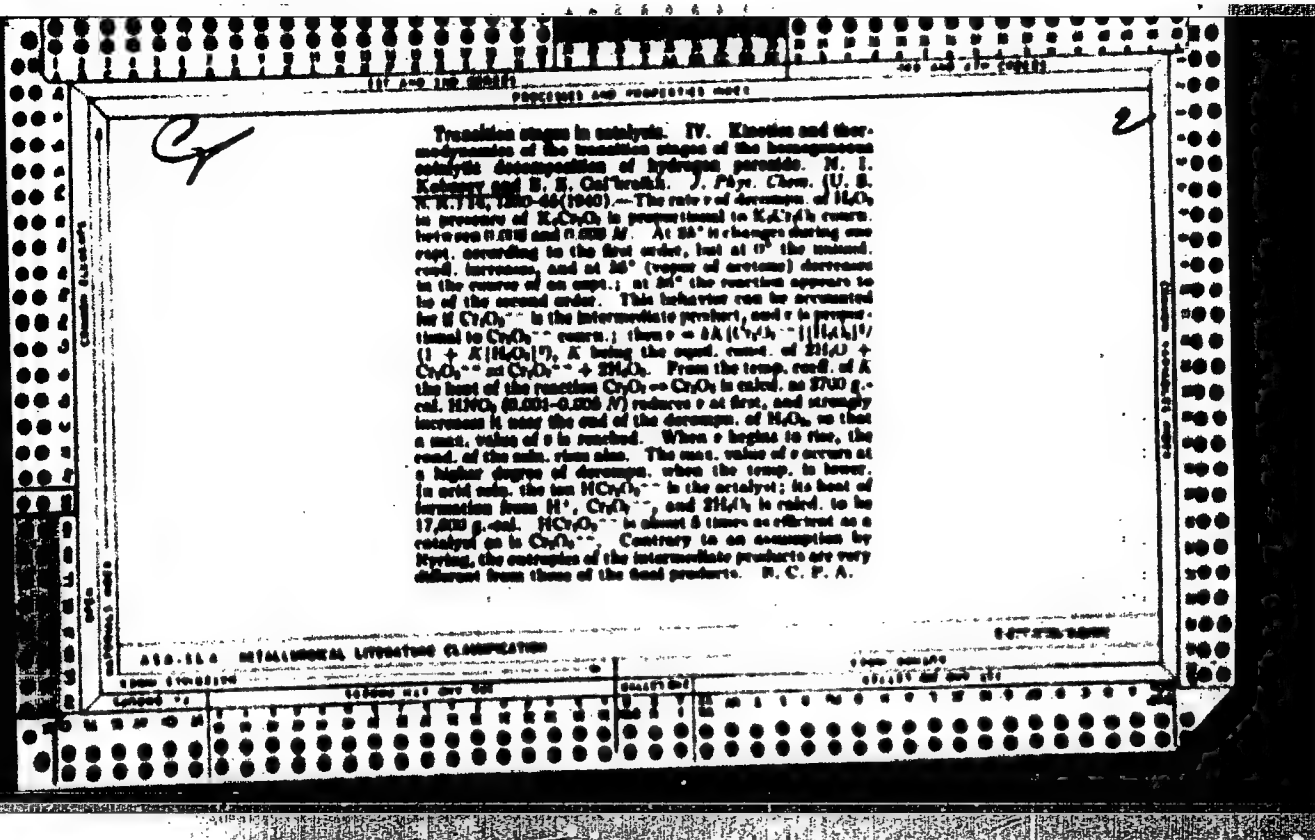


A-1

RC

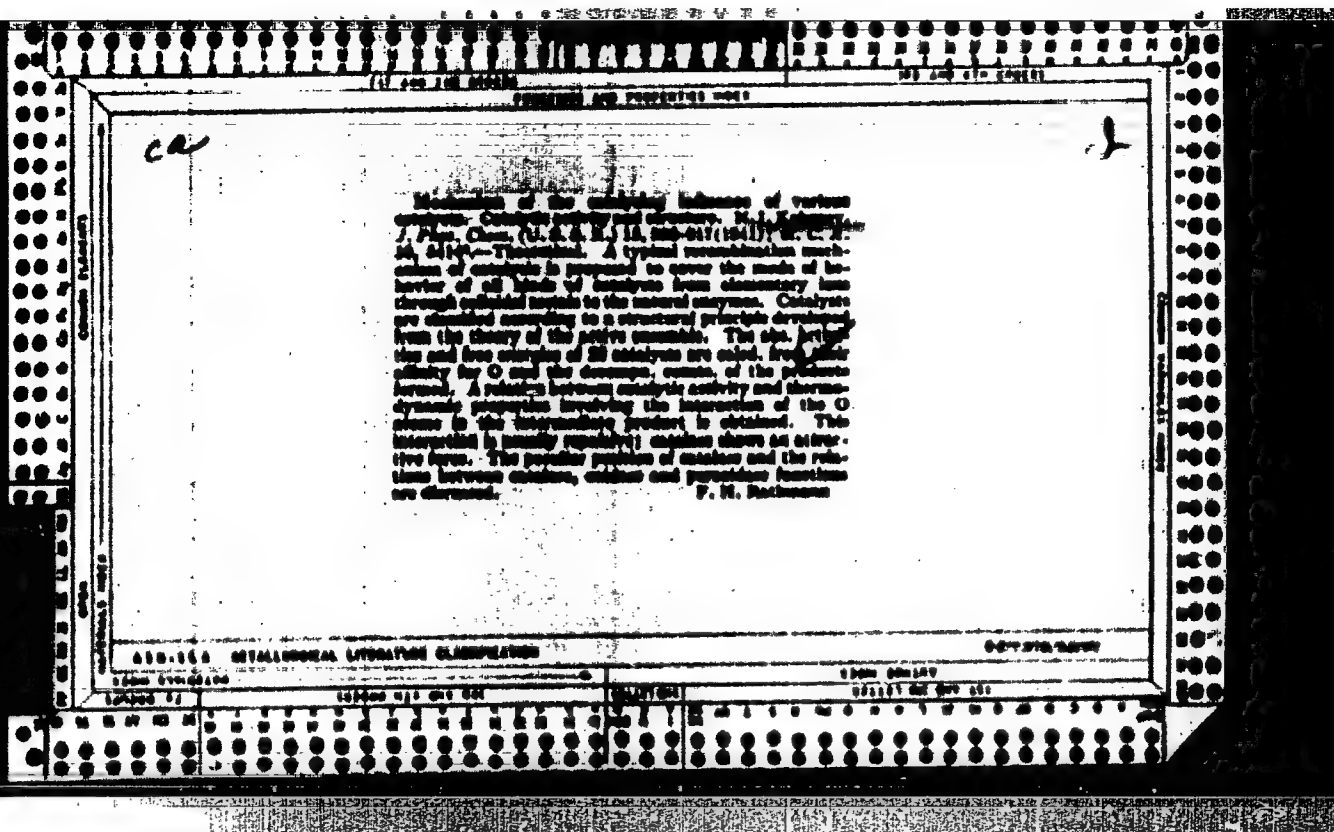
Volume and surface processes in the oxidation of nitrogen  
by the glow discharge. By S. A. Konovalova and N. I.  
Mikhaylov. (Z. Phys. Chem. 1966, 24, 625-641); cf. A.  
Mikhaylov (1966). Oxidation of  $N_2$  by  $O_2$  in a glow discharge in  
the presence of  $H_2O$  vapor. It is assumed that the reaction  
velocity  $v_1$  in presence of  $H_2O$  is that of the reaction in space,  
and the difference  $v_2$  between the rate in absence of  $H_2O$  and  
 $v_1$  is the velocity of the surface reaction. The reaction velocity  
 $v_1$  is the velocity of the surface reaction. The reaction velocity  
in air at 215 mm.  $v_1$  increases with  $[O_2]$ ,  $[N_2]$ , and  $v_2$  is max.  
near 215 mm. and falls at high pressures to zero or to negative  
values. The lowering of  $v_2$  at high pressures is presumably due  
to a reduced speed of diffusion of excited clusters to the walls.  
In air at 215 mm.  $v_1$  has identical value for 0.44%—2.16% of  
 $H_2O$ , but (10%) in the discharge tube is lowered when the  
rises. In air at 215 mm. both  $v_1$  and  $v_2$  increase when the  
current increases (25—100 ma.) but the rise of  $v_1$  is 3 times as  
steep as that of  $v_2$ . The easy poisoning of the  $N_2$  cathode  
shows that it is of a non-thermal nature. J. J. K.





Experimental study of the effect of surface interactions on the adsorption of gases. I. Adsorption of gases. II. Adsorption of gases. J. M. Goffin and R. J. Smith, *J. Phys. Chem. Anal.*, 1941, 13, 261-274, 275-289. Adsorption isotherms at 0° between 10<sup>-3</sup> and 10<sup>-4</sup> mm. Hg of H<sub>2</sub>, CO, C<sub>2</sub>H<sub>6</sub>, and propylene on Cu, and of NH<sub>3</sub> on Fe, are measured. They do not comply with Langmuir's equation and can be accounted for by assuming that an adsorbed molecule lowers the adsorption potential  $U$  around it. The adsorption of CO on Cu containing (CN)<sub>2</sub> (i.e., 0.45-0.48 c.c. per g. of Cu) is not only < that on pure Cu but the deviation of its adsorption isotherm from Langmuir's equation is increased. If (CN)<sub>2</sub> were just blocking the adsorbing surface this deviation would have been unchanged or reduced; its increase shows that adsorbed poison strongly lowers the  $U$  of their neighbors. When the surface area of Cu is reduced by recrystallization at 300°, the amount adsorbed ( $\sigma$ ) is less but the shape of the isotherm does not change.

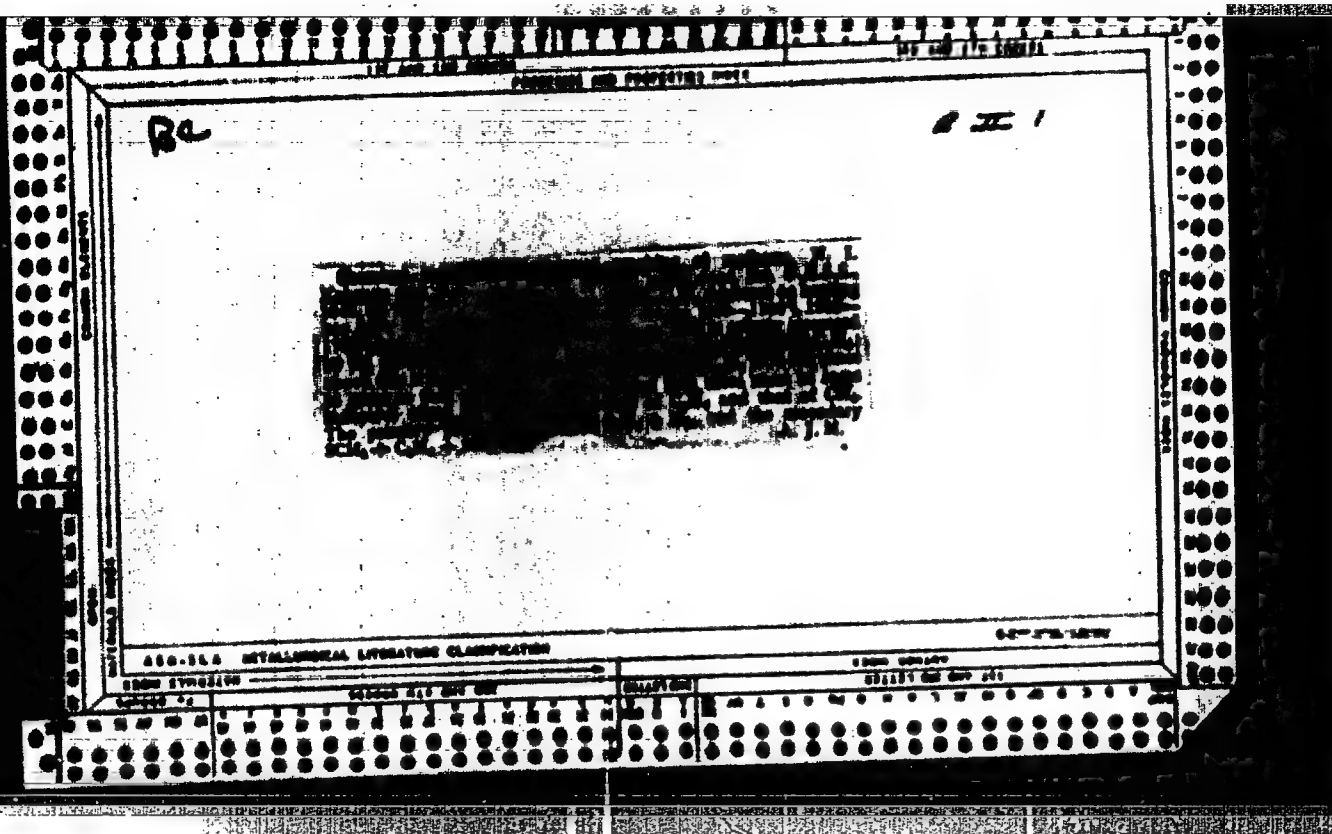
(11. The rate  $v$  (i.e., per sec.) of desorption of CO, H<sub>2</sub>, propylene, and (CN)<sub>2</sub> from Cu, and of NH<sub>3</sub> from Fe, is measured at -60° to 180°. It rapidly decreases when  $\sigma$  diminishes, and the ratio  $v/\sigma$  decreases as well, showing that  $U$  is the higher the smaller is  $\sigma$ . The increase of  $v/\sigma$  with  $\sigma$  is less marked at higher temp. (CN)<sub>2</sub> raises  $v/\sigma$  and its increase with  $\sigma$  for desorption of CO from Cu; this shows that the  $U$  of CO is lowered by the near-by molecules of (CN)<sub>2</sub>. I. J. S.



<p>CA</p> <p>Detection of aldim-naphthylamine in rubber objects M. M. Kabanov... <i>Lab. Frak.</i> (U. S. S. R.) 10, No. 6, 20 (1941).—Add 100 cc. of 1% AcOH to 5 g. of rubber (in the form of rubber rings) in a flask, cover with a watch glass</p> <p>hold for 30 min., to 5-10 cc. of the AcOH sol., add 1 cc. of sulfanilic acid sol. + 1 cc. of 0.1% NaNO<sub>2</sub> (freshly prepd.) and observe the color after 5 min. In the pres- ence of aldim-naphthylamine, the color of the sol. changes to pink, owing to the formation of the azo dye. A control test, must be made without the sol. For rub- ber objects which are not subjected to heat-treatment during the production process (rubber stoppers), the following method is used: cut 5 g. of the rubber object with 100 cc. of 1-2% AcOH for 24 hrs. and test the sol. for aldim-naphthylamine as before. W. R. Hearn</p>		30
<p>ADD-100 METALLURGICAL LITERATURE CLASSIFICATION</p>		

*En. in*

Kinetics and energetics of the high-temperature cracking of methane to acetylene. M. I. Makary and L. I. Kozlov (Comp. Acad. Sci. U.S.S.R., 1961, 34, 36-38). Equations are given for the kinetics of the various dehydrogenation reactions occurring in the cracking of  $\text{CH}_4$  to  $\text{C}_2\text{H}_2$  at high temp. The equilibrium constants are obtained. The high-temp. reactions, in contrast to those occurring at lower temp., do not take place at the walls. A I M

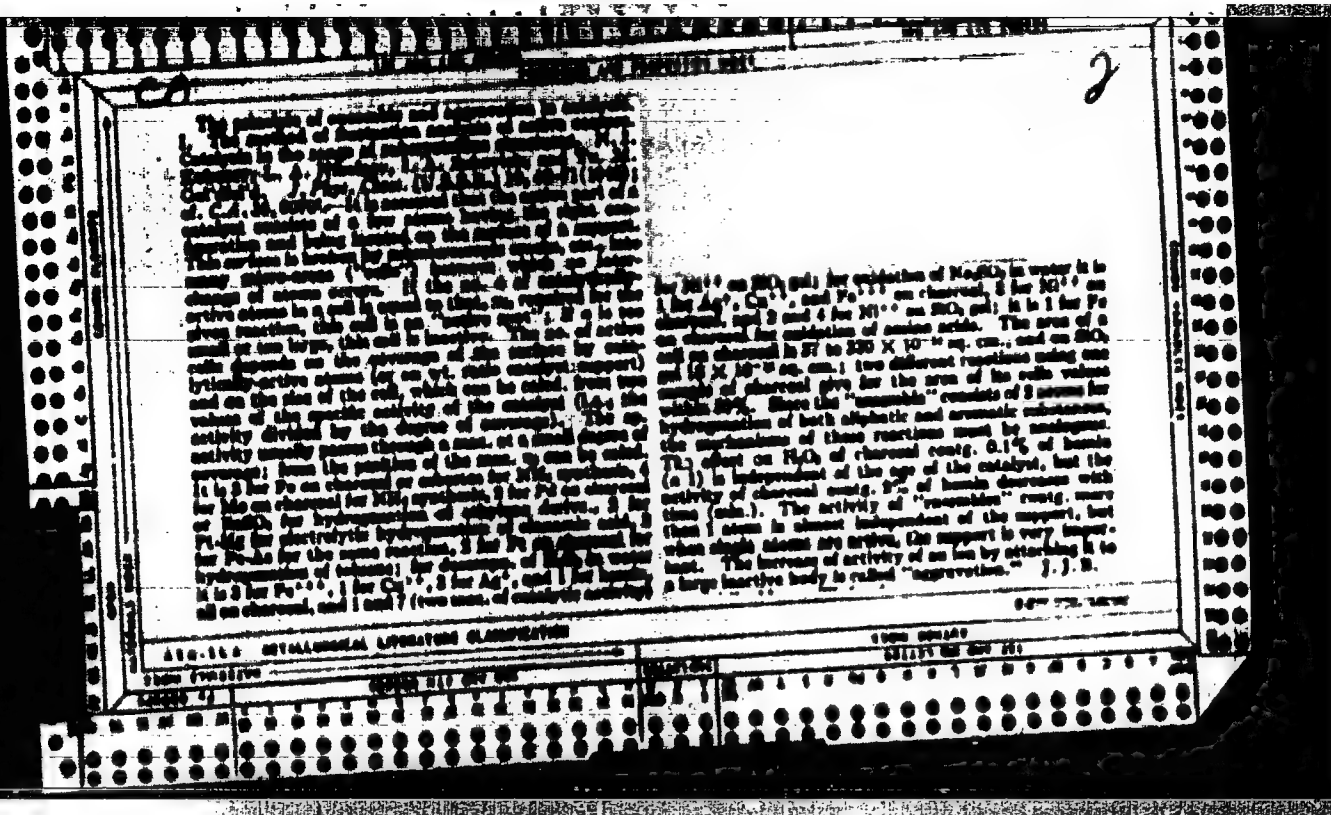


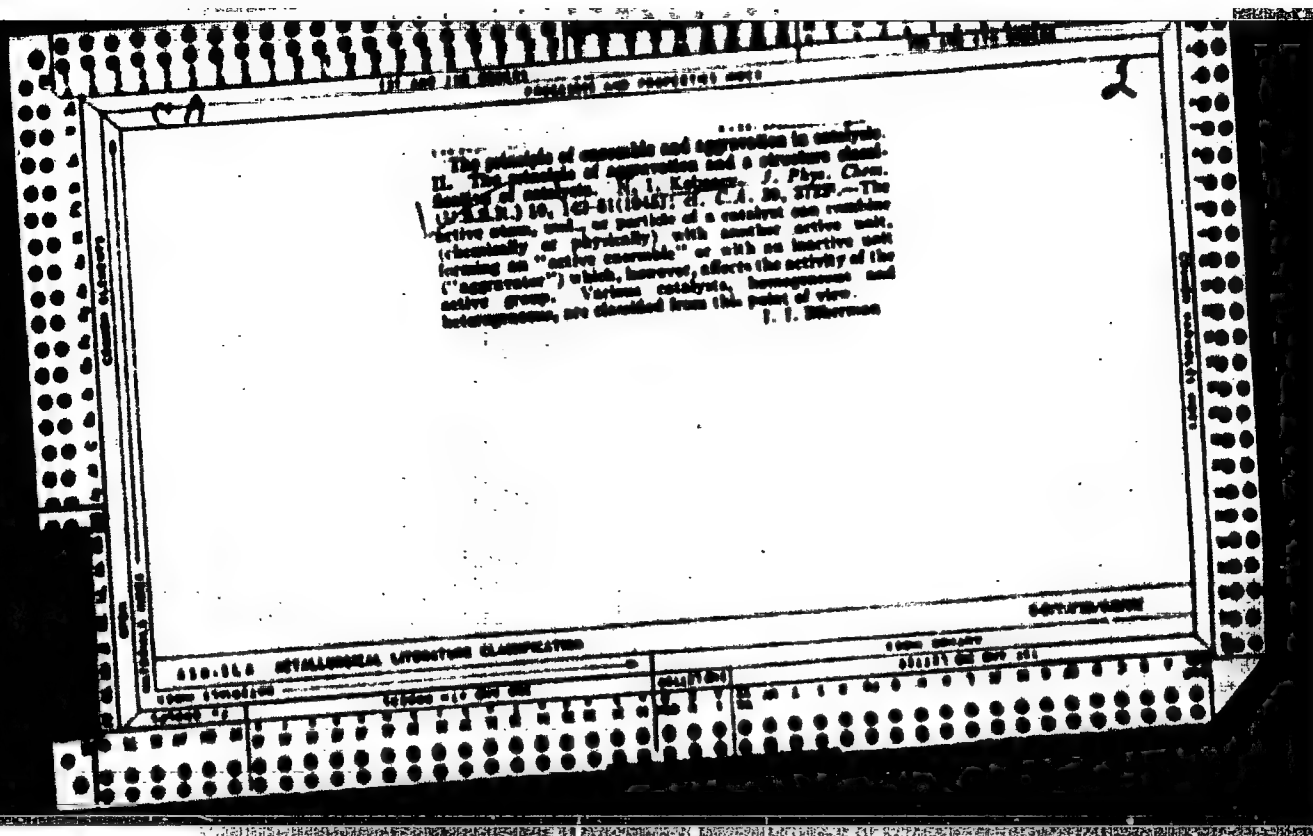
Activation characteristics of the thermal cracking of methane.  
 N. I. Kabanov and E. N. Frolov (Leningrad, Acad. Sci. U.S.S.R.,  
 1941, 22, 223-229).—The kinetics of the cracking of  $\text{CH}_4$  at low  
 pressures, and when mixed with  $\text{H}_2$ , have been investigated. In-  
 crease of pressure accelerates the cracking process.  $2\text{H}_2$  →  
 $\text{C}_2\text{H}_2$  +  $2\text{H}_2$  and  $\text{C}_2\text{H}_2$  →  $\text{C}_2\text{H}_4$  +  $\text{H}_2$ . Addition of  $\text{CH}_4$  to the  
 system has the same effect as a small decrease of pressure. The  
 kinetic results obey the Arrhenius equation over a wide temp-  
 erature range.

2463. IS QUENCHING NECESSARY IN THERMAL CRACKING OF METHANE TO ACETYLENE? Kobzarev, M. I. (Compt. Rend. Acad. Sci. U.R.S.S., 1943, 29, (7), 261-264).

Tests have been made on the influence of rapid and slow cooling of the reaction gases upon the yields of acetylene and ethylene in the cracking of methane-containing gases. The experiments were carried on in quartz, porcelain and carbon tubes in a platinum and in a Tammann stove at temperatures varying from 990 to 2000°C. The results of the experiments are given in a table. The data obtained show that when applied to the cracking of methane quenching is not only unnecessary, but, as a rule, even harmful. It is expedient to allow "after-cracking" after the gas has passed the heating zone. In this way one may increase the yield of unsaturates (and, thereby, cut down energy consumption) to 50%. In one test only cooling proved useful owing, probably, to a low rate of gas movement not consistent with the high temperature of the cracking process. Substitution of air cooling for special water cooling has no influence whatever upon the total yield of un-

saturates (10.8% and 11.1%), but merely changes the ethylene-acetylene ratio in favour of the latter.





**Catalytic function of benzene.** E. I. Nikolsky and N. I. Kabanov (Moscow Univ.), J. Phys. Chem. (U.S.S.R.) 19, 867-870 (1945). - The rate of decrease of eq. H<sub>2</sub>O<sub>2</sub> by benzene dissolved in air, 100 cc., is proportional to the concn of benzene between  $5 \times 10^{-4}$  and  $5 \times 10^{-2}$  g./cc. At the concn of H<sub>2</sub>O<sub>2</sub> between 0.02 and 0.4 g.-equiv./l. benzene (C) is incorporated into the benzene-H<sub>2</sub>O<sub>2</sub> complex; it is raised but the rise is the smaller the greater is the ratio of benzene:C. This shows that simple pairs of benzene and C are the active units of the catalyst. When benzene in air C are the active units of the catalyst. When benzene is high, addition of C lowers the efficiency compared with that in the absence of C. The efficiency of benzene on C decreases with time the more rapidly the higher is the ratio of 0.2 mg. of benzene + 0.1 g. of C drops by about 50% within 1 hr. This decrease of efficiency is absent when 0.1 g. of C contains less than 0.1 mg. of benzene. Conclusions: The surface of charcoal consists of migration cells about  $5 \times 10^{-9}$  sq. cm. large (cf. C.A. 39, 3722d).

E. I. Nikolsky  
N. I. Kabanov

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400.556 METALLURGICAL LITERATURE CLASSIFICATION

DATE 1945 JUL 10

VOLUME 1

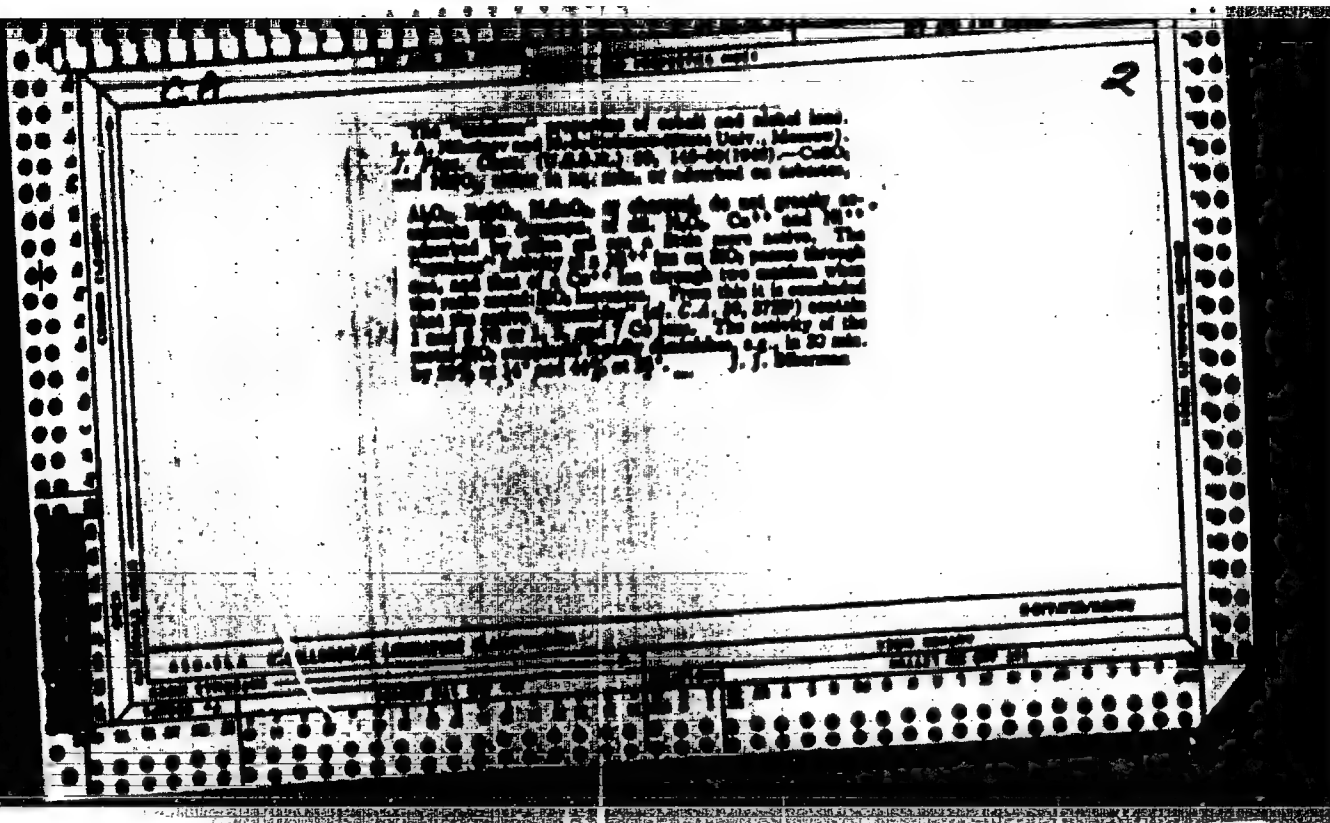
PAGE 10



KOBOZEV, W. I.

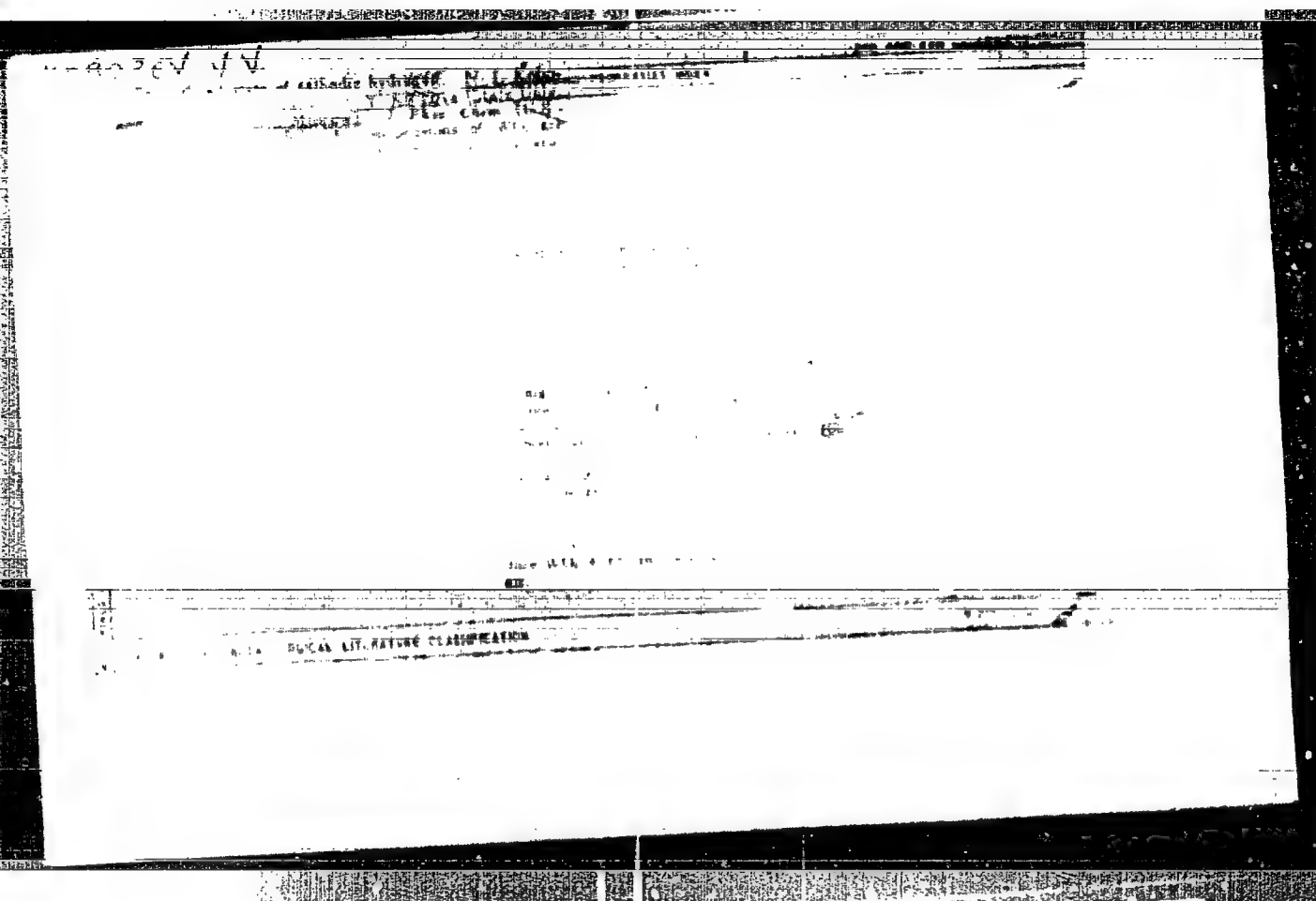
Experimental studies of the intermediate stages of catalysis. IV. The kinetics and thermodynamics of intermediate stages in homogeneous catalytic decomposition of hydrogen peroxide. V. I. Kobozev and A. G. Gerasimov (Lomonosov State Univ., Moscow). *Acta Physicochim. (U.R.S.S.)* 26, 470-492 (1946); *cf. C.A.* 21, 3520; 27, 6720. — Previous work on catalysis of  $H_2O_2$  decompos. by molybdate and chromate is summarized. New data are given for rate of decompos.  $V$  of  $H_2O_2$  in neutral solns. of 0.001-0.004  $M$  dichromate at temps. from 0° to 80°.  $V$  is given by the expression  $k(Cr_2O_7^{2-})K(H_2O_2)/(1 + K(H_2O_2)^2)$ , where chem. formulas in parentheses indicate total analytical molar concns. This is precisely the formula expected for unimol. decompos. of a complex in equil. with 1 mol. of  $Cr_2O_7^{2-}$  and 2 mol. of  $H_2O_2$ , when  $H_2O_2$  is in excess.  $K$  is the equil. const. for formation and  $k$  the unimol. rate const. for decompos. of the complex  $Cr_2O_7^{2-}$ .  $K$  corresponds to  $\Delta F^\circ = -2741$  cal., independent of  $T$ , and  $k$  corresponds to  $\Delta F^\circ = -15,781$  cal. Similar analysis of an activation energy of 15,781 cal. Similar analysis of previous data yields in a table of thermodynamic and kinetic data for the possible complex ions  $MoO_4^{2-}$ ,  $WO_4^{2-}$ ,  $Cr_2O_7^{2-}$ , and  $HCr_2O_7^{2-}$ . The values for the different complexes are of the same order of magnitude except for  $HCr_2O_7^{2-}$ , which is thermodynamically more stable but decomps. faster as a result of an abnormally high frequency factor, which probably indicates a chain reaction. These intermediate complex. are very different from the "activated complexes" of Eyring since their entropies are not close to the entropy of the final reaction products. A. C. Allen

$MoO_4^{2-}$ ,  $WO_4^{2-}$ ,  $Cr_2O_7^{2-}$ , and  $HCr_2O_7^{2-}$ . The values for the different complexes are of the same order of magnitude except for  $HCr_2O_7^{2-}$ , which is thermodynamically more stable but decomps. faster as a result of an abnormally high frequency factor, which probably indicates a chain reaction. These intermediate complex. are very different from the "activated complexes" of Eyring since their entropies are not close to the entropy of the final reaction products. A. C. Allen



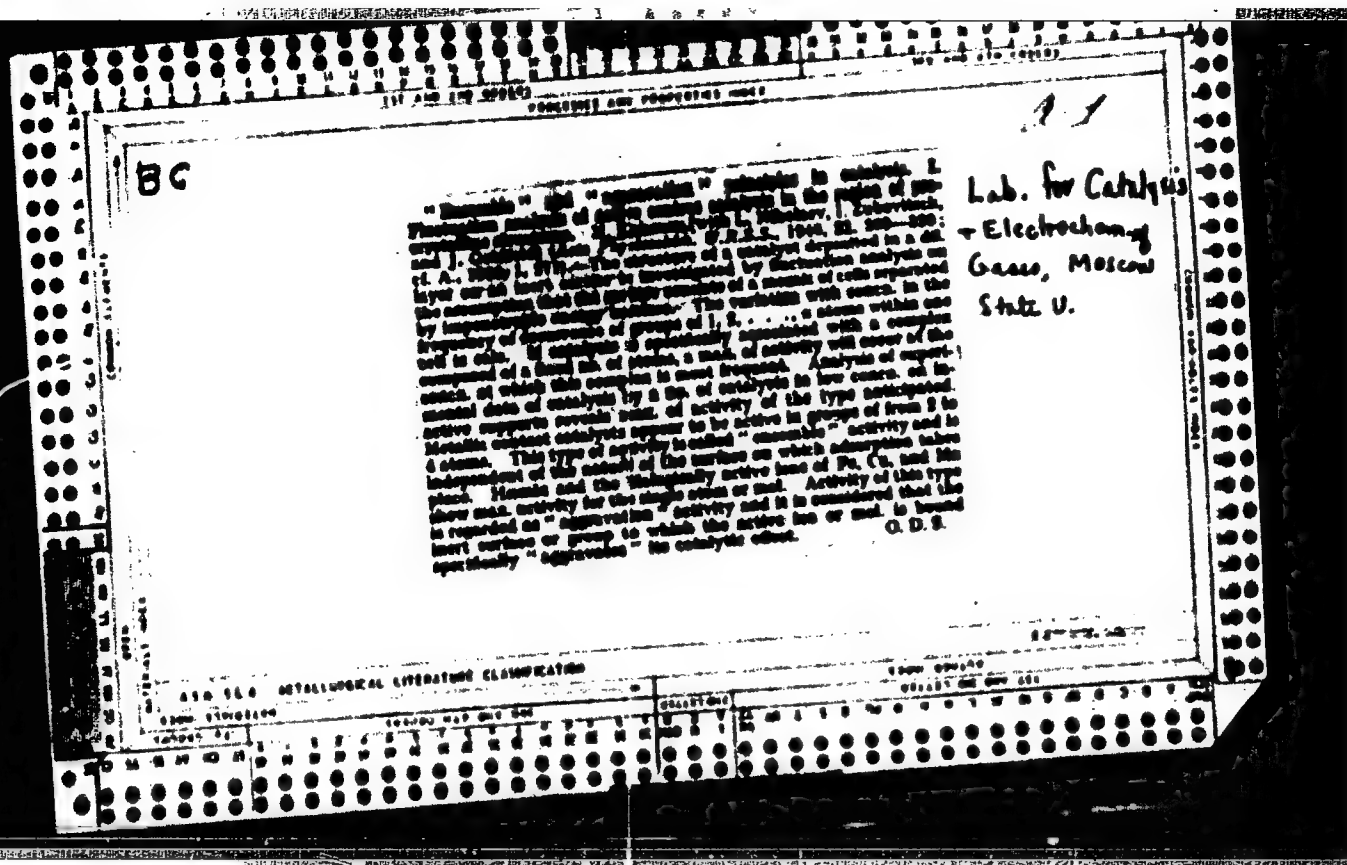
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KOBOSEV, N.

Aug/Oct 1955  
Chemistry - Aggravation and Ensemble Principles  
"The Ensemble and Aggravation Principles in Cataly-  
sis; II, The Aggravation Principle and Structural  
Classification of Catalysts," N. Kobosov, Lab for  
Catalysis and Electrochem Cases, Moscow State U  
Imeni Lomonosov, 15 PP  
"Acta Physicochimica URSS" Vol XII, No 5  
Outline of development of structural classification  
of catalysts formulated by author in 1941. Prin-  
ciple, underlying classification, is degree of com-  
plexity of structure of active center. Designed to  
classification system based upon aggregate  
classification of catalysts. Received, 13 Jul 1955.  
1955

**Catalytic action of various catalysts.** The catalysts and structure. N. I. Kuznetsov (Moscow State Univ., *Acta Physicochim. U.S.S.R.* 21, 600-618 (1968) (in English).—The action of catalysis and of other catalysts capable of speeding up the evolution of  $O_2$  from  $H_2O_2$  is analyzed on the basis of 3 reactions (a)  $P + H_2O_2 \rightarrow P_2O + H_2O$ , (b)  $P + 2H_2O_2 \rightarrow P_2O_2 + 2H_2O$ ; and (c)  $P_2O_2 = P + O_2$ , where  $P$  is the catalyst. (a) and (b) are considered as rapid-equil. or steady-state systems having equil. constants  $K_1$  and  $K_2$ , resp. Reaction (c) is postulated as the slow step with a velocity const.  $k$ . Methods are shown for plotting rate data so as to yield values for  $K_1$ ,  $K_2$ , and  $k$ . The deduced true activities per active center at  $0^\circ$  in relative units for the various catalysts were:  $MoO_3$ ,  $CrO_3$ ,  $WO_3$ , and  $I$ , 0.1;  $Fe^{3+}$ , 1.0;  $Cr_2O_3$ , 11.0;  $Fe^{3+}$  on charcoal, 100;  $MoO_3$ , 50 to 600;  $MoO_3$

on charcoal, 100;  $MoO_3$ ,  $5 \times 10^3$ ;  $Fe_2O_3$  and  $MoO_3$ ,  $10^4$ ; and  $Fe_2O_3$  on charcoal,  $10^5$ . The const.  $k$  in the equation  $k = A e^{-E/RT}$ , where  $E$  is the energy of activation of reaction (c), is equal to  $\sim 10^{10}$  throughout the series; this shows that the enhanced activity of the more complex catalysts must be attributed primarily to a lowering of the activation energy.  $K$  is calculated from  $K_1$  and  $K_2$ ,  $\Delta F_1$  for reaction (a) and  $\Delta F_2$  for reaction (b). A plot of  $\log k$  against  $\Delta F_1 - \Delta F_2$  causes data for all catalysts to fall on 3 straight lines, one for the supported catalysts including  $MoO_3$ ,  $CrO_3$ ,  $WO_3$ , and  $Fe_2O_3$  on charcoal, and the other for the homogeneous catalysts including  $MoO_3$ ,  $CrO_3$ , and  $Fe^{3+}$  in soln. The increasing activity for each series corresponds to decreasing repulsion between the  $O$  atoms in  $P_2O_2$ ; for catalysts,  $\Delta F_1 - \Delta F_2$  is neg. corresponding to attraction rather than repulsion between the  $O$  atoms. A picture of the intermediate complex holding the 2  $O$  atoms is deduced in which thermodynamic repulsion between the  $O$  atoms decreases as the total amt. of supporting material to which the active centers are attached increases. The interrelation of catalysts, peroxide, and oxidase functions is also discussed. P. N. E.

CA	131 200 100 100	131 200 100 100	131 200 100 100
131 200 100 100	131 200 100 100	131 200 100 100	131 200 100 100
131 200 100 100	131 200 100 100	131 200 100 100	131 200 100 100
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131 200 100 100	131 200 100 100	131 200 100 100	131 200 100 100
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Specific effects of micro amounts of heavy metals on the rate of oxidation catalysis. N. I. Kabanov and I. A. Zolotarev (Leningrad State Univ., Moscow). *Comp. rend. acad. sci. U.R.S.S.* 62, 131-4 (1968) *cf. C.A.B.* 5728. Various catalysts were proved, by simultaneous or successive adsorption on magnet charcoal (surface area approx. 200 sq. m./g.) from min. of the salts. In each case the concn. of the first metal was held at 0.1% of the total catalyst, and that of the second metal was varied: Fe<sup>+++</sup>, Cu<sup>++</sup>, Co<sup>++</sup>, Pb<sup>+++</sup>, Fe<sup>+++</sup>, Ag<sup>+</sup>. The activity of the resulting catalyst was measured by detg. the no. of g. mol. of substrate transformed per min. The activity of one metal was strongly affected by the addn. of micro amts. of another, and this effect was about the same for catalase (decompn. of H<sub>2</sub>O<sub>2</sub>) or oxidase (oxidation of Na<sub>2</sub>SO<sub>3</sub>) except that catalase was inhibited whereas oxidase was enhanced. For example, the addn. of 0.008% Cu<sup>++</sup> to 0.1% Fe<sup>+++</sup> increased the oxidation activity 7 times and decreased the catalase 15 times. As addnl. amts. of a metallic element were added to the catalyst, the change in activity became less, approaching a certain limit which was readily reached, and was only slightly more than the original increase. The phenomena were no doubt related to the state of adsorption of the ions. In a homogeneous medium the phenomena may be reversed. The addn. of Cu to Fe not only inhibits catalase, but actually weakens oxidase. These phenomena are considered part of the general subject "effect of traces" and as such may be of importance to the explanation of the functions of hormones, vitamins, and the like. Peter M. Bernays

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Pedagogical Inst., Yaroslavl.

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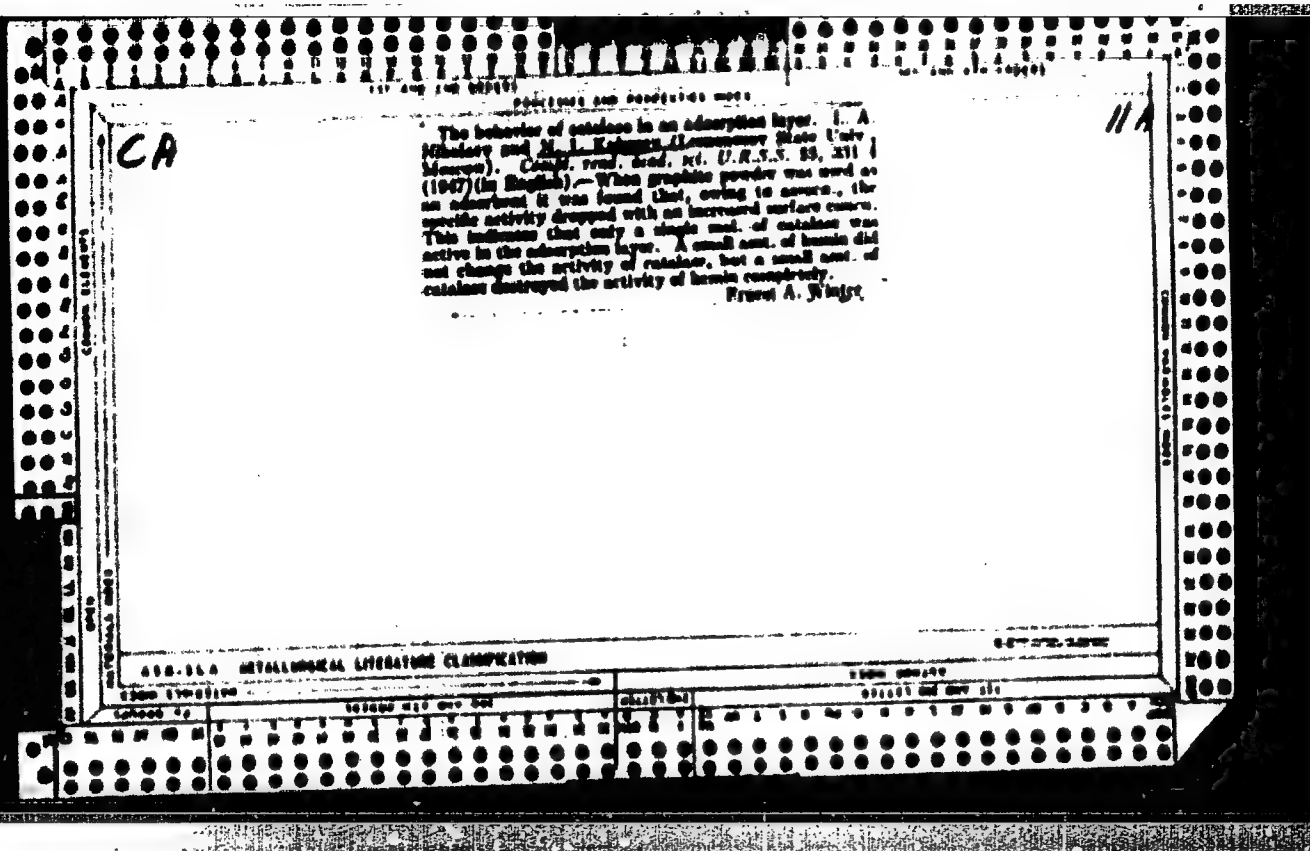
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<p>26</p>	
<p><b>B</b></p>	
<p>Concerning Some Relationships Between Entropy of Chemical Bonds. (In Russian.) N. I. Kobayev. <i>Zhurnal Fizicheskoi Khimii</i> (Journal of Physical Chemistry), v. 22, Aug. 1948, p. 1002-1015.</p> <p>Two new relationships were established. First, standard entropy changes during chemical reactions are proportional to changes in the number of moles of gas. Second, internal entropy of gaseous molecules is calculated on the basis of their complexity and from increase in molecular weight according to an empirical formula. Validity of the relationships is shown by a large number of cases, data being tabulated and charted.</p>	
<p>400.11.2 METALLURGICAL LITERATURE CLASSIFICATION</p>	
<p>10000 110 000 000</p>	

RECEIVED, M. I.

M. I. Kabovay and V. V. Monblanwa, A letter to the Editor. I. 1911.

Refers to previous publications by the writers (J. Phys. Chem. (USSR) 20, 653 (1946) and Z. Elektrochem. 8, 592 (1930) and letter concerning it by Bagotzki and others (Doklady Acad. Sci. (USSR) 53, 5 (1946) and J. Phys. Chem. (USSR) 21, 251 (1947).

Lab. of Catalysis and Gas Electrochemistry  
Moscow Lomonosov State University  
Chair of Chemistry of the Second Moscow Medical Inst.  
June 12, 1948

30: Journal of Physical Chemistry (USSR) 22, No. 12 (1948)

USSR/Medicine - Biology

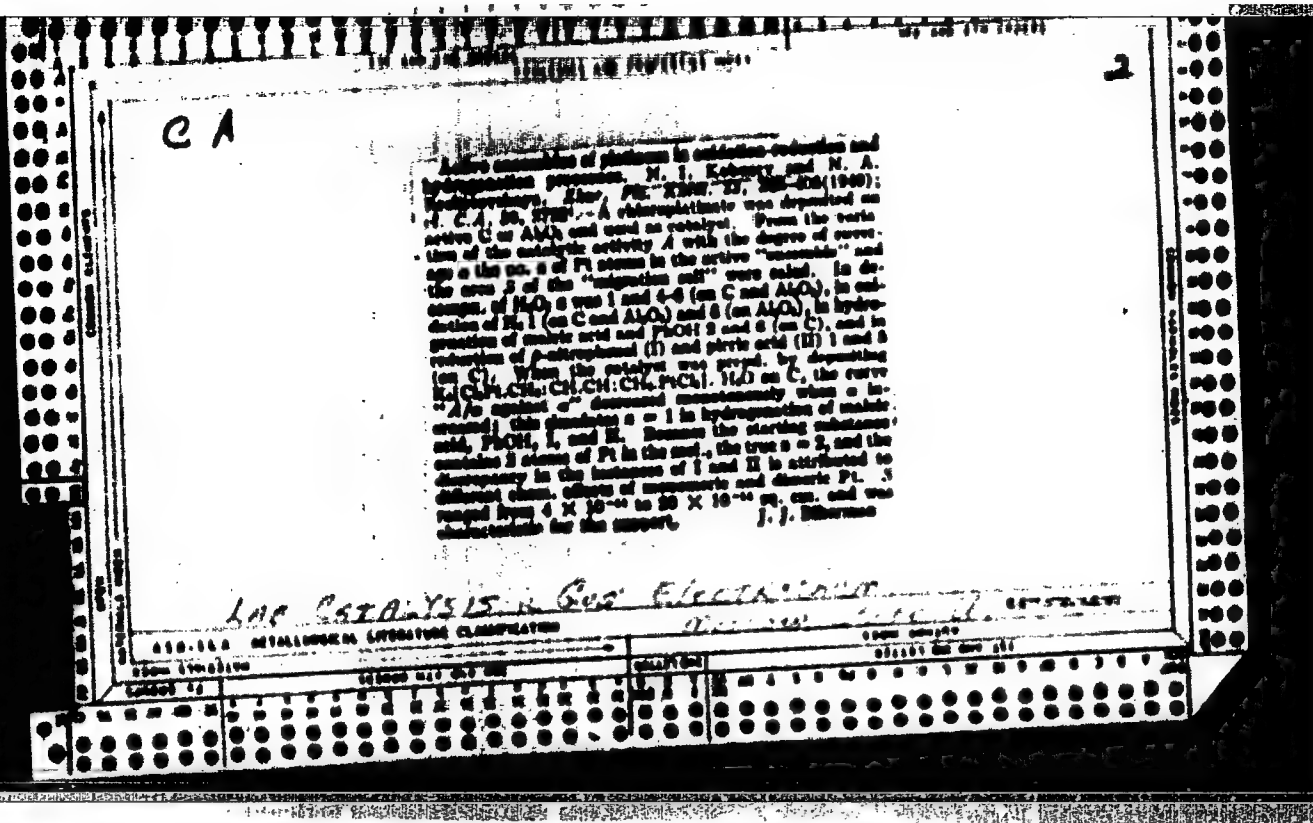
Jan 1948

"Elements of the General Theory of Vector-Brownian Processes, and the Laws of Biological Kinematics,"  
N. I. Kobzarev, 30 pp

"Byullet Mosk Obshch Issyt Pri, Otdel Biolo" Vol LIII,  
No 1

Describes experiments conducted to solve two problems:  
1) relationship between vector and Brownian components  
in trajectories; and 2) make trajectories "Brownian"  
by taking vector potential inherent in organisms, in  
this case insects. Editors note that this work, in  
parts, closely follows material published by E.  
Schrödinger in his book "Life From the Standpoint of  
Physics."

61766



RUZEV, N. I.

"Structure of Disperse Catalyst and Carriers in the Light of the Theory of Active Combinations," Zhur. Fiz. Khim, 23, No. 12, 1949. Moscow OL St U in M. V. Lomonosov, Lab Catalysis and Gas Electrochem, Moscow. -c1949-.

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"Synthesis and decomposition of ammonia in electrical discharges II.  
Sensitized synthesis of ammonia in a glow discharge, " Yu. V. Filippov, V. P.  
Lebedev, V. V. Zaslavskiy and N. I. Kobozev (Lomonosov State Univ., Moscow). Zhur.  
Fiz. Khim, 24, 1009-15 (1950)

For abstract of article see card for Yu. V. Filippov.

CA

11A

The problem of the micro dose in chemistry and in biology (growth substances as activators of catalytic systems) 1. A. Zuhovitch and N. I. Kabanov (Moscow Univ.). *Ann. Akad. Nauk SSSR* 14, 13-22 (1951); *Ch. U.S.S.R.* 43, 8923. -- The absorption catalysts consisted of 1%  $Fe^{+++}$ ,  $Cu^{++}$ , and  $Ag^+$ , deposited on sugar C. The catalase activity (H<sub>2</sub>O<sub>2</sub> decoloration) was first measured. After the deposition of various amounts of org. acids or phytohormones, the activity of the catalyst was again determined. A comparison of these 2 activities showed the accelerating or inhibiting effect of micro doses of org. substances on the activity of absorption catalysts. Small amounts of growth substances (0.01-0.1%) activated the catalysts, whereas larger doses (0.1-1%) inactivated them. As is known, the same type of action is shown by the phytohormones in stimulating and in inhibiting plant growth. The av. activating effect by phytohormones on the Cu, Ag, and Fe catalysts was 20, 22, and 11%, resp. Fatty and aromatic acids were inactive. Aliphatic hydroxy acids (glycolic, lactic) sharply inactivated the catalysts. Salicylic acid activated the Ag catalyst, but was without effect on the Fe catalyst. The activation of absorption catalysts by phytohormones could be very accurately measured, and the results were always reproducible, thus providing a phys-chem. method of characterization of phytohormones. H. Priestley.

197

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N. I. Kobozev. Some remarks concerning the article by D. V. Sokol'skii and K. I. Stender:  
"The role of the carrier in heterogeneous catalysis." P. 375

M. V. Lomonosov Moscow State Univ. Lab. of Catalysis & Gas Electrochem., Oct. 17, 1950

SO: Journal of Physical Chemistry, Vol. 25, No. 3 (March 1951)

CA 44

Theoretical errors in the works of A. N. Prumkin, Z. A. Iofa, and V. S. Bagatskii (on theory of hydrogen overvoltage). — *Khimiya*. *Zhur. Fiz. Khim.* 22, 1111-16 (1941). — The theory of H overvoltage of K. and Nohrseov (C.A. 30, 1930) is defended. Attempts are made to show that the arguments raised against it by Prumkin's school (Bagatskii, et al., C.A. 41, 3701A, 6475c) are theoretically answered because they purport to disprove a reaction mechanism (stationary state) by thermodynamic criteria. (equal state).

Michel Boudart

KOBOZEV. N. I.

Overvoltage

Adsorption theory of hydrogen overvoltage. 1. Overvoltage and energy of M-H bond.  
Zhur.fiz.khim. 26 no.1. '52.

Monthly list of Russian Accessions, Library of Congress, September 1952. UNCLASSIFIED.

KOBOZEV, N. I.

USSR/Chemistry - Catalysts Jan 52

"Problem of the Paramagnetic State of Catalytically Active Iron Layers (Errors in S. L. Kiperman and M. I. Tenkina's Article 'Investigation of the Magnetic properties of Iron-Carbon Catalysts')," V. B. Evdokimov, I. N. Ozeretskovskiy, N. I. Kobozev, Moscow State University M. V. Lomonosov

"Zhur Fiz Khim" Vol XXVI, No 1, pp 135-144

Sufficiently dil layers of Fe on carbon are completely paramagnetic, i.e., the Fe is atomic rather than cryst. Catalytic activity of ammonia Fe catalysts, etc., is due to atomic "ensembles" rather than Fe or any other element in the cryst state. There is a sharply lowered ferromagnetism in comparison with ordinary iron even in highly concd Fe layers on carbon. Diln of the Fe adsorption layer on carbon leads to a strong increase of paramagnetism due to Fe atoms. The same phenomenon was observed with adsorbed  $Ni(NO_3)_2$ . Increase of magnetic susceptibility and ferromagnetism in the samples after oxidation were observed.

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